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PROJECT SPECIFICATION  
*for the*



**City of Slidell**

CITY HALL PARKING LOT & COURTYARD  
BOUSCAREN STREET  
SLIDELL, LOUISIANA 70458  
Slidell Project No. 600-129

OWNER:  
City of Slidell  
2055 Second Street  
Slidell, Louisiana 70458

Prepared by:

ARCHITECT:  
DAMMON ENGINEERING, INC.  
554 OLD SPANISH TRAIL  
SLIDELL, LOUISIANA 70458  
Tel: (985) 649-5832 Fax: (985) 641-5950



August 16, 2013

ARCHITECT'S PROJECT NO. 2172



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## INTRODUCTORY INFORMATION

DAMMON ENGINEERING, INC.  
554 OLD SPANISH TRAIL  
SLIDELL, LOUISIANA 70458  
Phone: 985-649-5832  
Fax: 985-641-5950  
Dammonengineering.com





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DOCUMENT 00010  
PROJECT DIRECTORY

OWNER: CITY OF SLIDELL  
2055 Second Street  
Slidell, Louisiana 70458  
Tel: (985) 646-4270  
Owner's Representative: Donna O'Dell

ARCHITECT: DAMMON ENGINEERING, INC.  
*an Architectural and Engineering firm*  
554 Old Spanish Trail  
Slidell, Louisiana 70458  
Tel: (985) 649-5832  
Fax: (985) 641-5950  
Architect in Charge: Kevin Kinchen

END OF DOCUMENT



DOCUMENT 00020

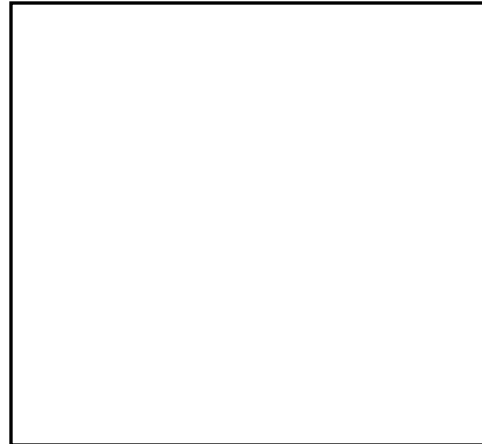
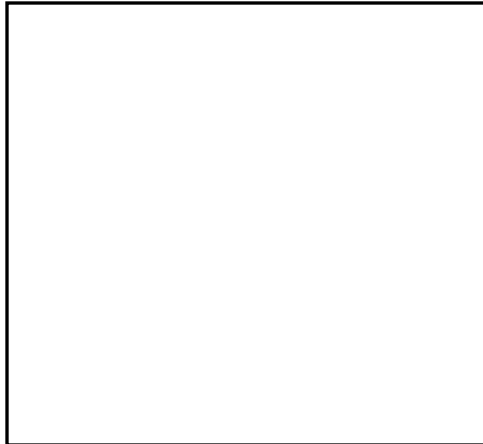
PROFESSIONAL SEALS

PROJECT NAME: CITY OF SLIDELL  
CITY HALL PARKING LOT & COURTYARD  
BOUSCAREN STREET  
SLIDELL, LA 70458

DATE: AUGUST 16, 2013

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ARCHITECTURAL SPECIFICATIONS: The following Specification Sections were prepared by me or under my direct personal supervision:



Dammon Engineering, Inc.

INTRODUCTORY INFORMATION

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QUOTING & CONTRACTING REQUIREMENTS

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DIVISION 4 - ELECTRICAL

04510 - ELECTRICAL

END OF DOCUMENT



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# BIDDING & CONTRACTING REQUIREMENTS

DAMMON ENGINEERING, INC.  
554 OLD SPANISH TRAIL  
SLIDELL, LOUISIANA 70458  
Phone: 985-649-5832  
Fax: 985-641-5950  
Dammonengineering.com





**ADVERTISEMENT FOR BIDS**

**CITY HALL PARKING LOT & COURTYARD**

**SLIDELL JOB NO. 600-129**

**Bid No. 14-B008**

SEALED BIDS will be received by the City of Slidell at the **Office of the Finance Director, 2045 2nd St., Suite 214, Slidell, Louisiana, until 10:00 A. M. Central Time on October 09, 2013**, for the above referenced project, for the CITY OF SLIDELL, LOUISIANA. Bids will be publicly opened and read aloud thereafter in the Slidell City Council Chambers. Any bid received after closing time will be returned unopened.

Only bids from contractors who obtain Contract Documents either from the Engineer or from Bidsync AND who attend and sign in at the **mandatory pre-bid meeting on October 02, 2013 at 10:00 a.m. in the Slidell City Council Chambers, (suite # 319), 2045 Second St, Slidell, LA 70458** shall be considered responsive bidders for this project. The pre-bid meeting will include a non-mandatory visit to the project site.

The Contractor shall hold a Louisiana Contractor's license in Municipal & Public Works.

All bids shall be accompanied by bid security in an amount of five percent (5.0%) of the sum of the base bid and all alternates. The form of this security shall be as stated in the Instructions to Bidders included in the Bid Documents for this project. An executed affidavit and attestation form must be submitted prior to bid award.

Contract Documents may be examined and secured for **\$100 per set** from the **Engineer, Dammon Engineering, Inc. 554 Old Spanish Trail, Slidell, Louisiana 70458; 985-649-5832**. Contract Documents are also available for public inspection at the Slidell Engineering Dept.

Bidders also have the option to review, obtain, and print bid documents and submit bids electronically by visiting [www.bidsync.com](http://www.bidsync.com). Electronic bids will require a digital signature. You must register directly with Bidsync to utilize this service. You may also contact them at (800) 990-9339.

The signature on the bid must be that of an authorized representative of the corporation, partnership or other legal entity.

All applicable Federal, State, Local laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout.

All proposals, bids and applications are welcomed. The city encourages participation by Minority, Women-Owned, and Disadvantaged Business Enterprise firms.

Deposits are refundable to bonafide prime bidders and will be 50% refundable to all others with return of complete and unmarked documents no later than 10 days after receipt of Bids.

The bids shall be presented in a sealed envelope clearly marked:

SEALED BIDS:      CITY HALL PARKING LOT & COURTYARD  
                            SLIDELL JOB NO. 600-129  
                            LOUISIANA CONTRACTOR'S LICENSE NO.  
                            Bid No. 14-B008

Opening :      DATE    October 09, 2013  
  10:00 A.M. CST

The City of Slidell reserves the right to reject any or all bids and to waive informalities.

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Sharon Howes  
CITY OF SLIDELL  
Finance Director

Advertise 3 times in the St Tammany Farmer:

Advertise:    September 12, 19, 26, 2013

## **BIDDER'S CHECKLIST**

- Bid Forms including all unit prices and bid sheets. (Remember: In case of mathematical discrepancies the unit price shall take precedence – so check the unit prices and extensions carefully).
- Authorized signature of bidder on bid forms.
- Bid Bond or bid security.
- Bidder is advised to pay strict attention to bond requirements.
- Acknowledge all addenda.
- Contractor's name and license number on the outside of the envelope.
- Proper labeling as bid for the project on outside of the envelope.
- Delivered to the Office of the Finance Director.



**LOUISIANA UNIFORM PUBLIC WORKS BID FORM**

**TO: CITY OF SLIDELL**  
**P.O. BOX 828**  
**SLIDELL, LA 70459**

**BID FOR: CITY HALL PARKING LOT & COURTYARD**  
**SLIDELL PROJECT #600-129**  
**BID NUMBER 14-B008**

The undersigned bidder hereby declares and represents that she/he; a) has carefully examined and understands the Bidding Documents, b) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, c) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services for the construction and completion of the referenced project, all in strict accordance with the Bidding Documents prepared by: DAMMON ENGINEERING, INC. and dated: August 16, 2013.

Bidders must acknowledge all addenda. The Bidder acknowledges receipt of the following **ADDENDA** (Enter the number and date the Designer has assigned to each of the addenda that the Bidder is acknowledging):

No. \_\_\_\_ Dated: \_\_\_\_\_ No. \_\_\_\_ Dated: \_\_\_\_\_ No. \_\_\_\_ Dated: \_\_\_\_\_

**TOTAL BASE BID:** For all work required by the Bidding Documents (including any and all unit prices designated "Base Bid" \* but not alternates) the sum of:

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**ALTERNATES:** For any and all work required by the Bidding Documents for Alternates including any and all unit prices designated as alternates in the unit price description.

**Alternate No. 1** (*Owner to provide description of alternate and state whether add or deduct*) for the lump sum of:  
\_\_\_\_\_ Grass Pavers (additive) \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**Alternate No. 2** (*Owner to provide description of alternate and state whether add or deduct*) for the lump sum of:  
\_\_\_\_\_ Landscaping & Irrigation (additive) \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**Alternate No. 3** (*Owner to provide description of alternate and state whether add or deduct*) for the lump sum of:  
\_\_\_\_\_ Pond & Water Line (additive) \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**NAME OF BIDDER:** \_\_\_\_\_

**ADDRESS OF BIDDER:** \_\_\_\_\_

**LOUISIANA CONTRACTOR'S LICENSE NUMBER:** \_\_\_\_\_

**NAME OF AUTHORIZED SIGNATORY OF BIDDER:** \_\_\_\_\_

**TITLE OF AUTHORIZED SIGNATORY OF BIDDER:** \_\_\_\_\_

**SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER \*\*:** \_\_\_\_\_

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

\* The Unit Price Form shall be used, as this contract includes unit prices.

\*\* If someone other than a corporate officer signs for the Bidder/Contractor, a copy of a corporate resolution or other signature authorization shall be required for submission of bid. Failure to include a copy of the appropriate signature authorization, if required, may result in the rejection of the bid unless bidder has complied with La. R.S. 38:2212(A)(1)(c) or RS 38:2212(O) .

**BID SECURITY** in the form of a bid bond, certified check or cashier's check as prescribed by LA RS 38:2218.A is attached to and made a part of this bid. If a bid bond is provided it shall be on the attached form and only on the attached form.



**LOUISIANA UNIFORM PUBLIC WORKS BID FORM**  
**UNIT PRICE FORM**

**TO: CITY OF SLIDELL**  
**P.O. BOX 828**  
**SLIDELL, LA 70459**

**BID FOR: CITY HALL PARKING LOT & COURTYARD**  
**SLIDELL PROJECT #600-129**  
**BID NUMBER 14-B008**

**UNIT PRICES:** This form shall be used for any and all work required by the Bidding Documents and described as unit prices. **Amounts shall be stated in figures and only in figures.**

DESCRIPTION: Mobilization				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
1	1	Lump Sum		

DESCRIPTION: Excavation - Truck Measure				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
2	1,450	Cubic Yard		

DESCRIPTION: Backfill (Gran. Material) – Truck Measure				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
3	1,050	Cubic Yard		

DESCRIPTION: Remove 7 Catch Basins, 6 Pipe & 5 Signs				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
4	1	Lump Sum		

DESCRIPTION: Remove Existing Concrete, Sidewalks & Curbs				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
5	1	Lump Sum		

DESCRIPTION: Install Catch Basins				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
6	2	Each		

DESCRIPTION: Install Drain Pipe - 6" Polyvinyl Chloride Plastic				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
7	62	Linear Foot		

DESCRIPTION: Install Drain Pipe - 15" Polyvinyl Chloride Plastic				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )



		MEASURE		<i>Price)</i>
8	90	Linear Foot		

DESCRIPTION: Handicap Ramps				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
9	3	Each		

DESCRIPTION: Exposed Aggregate Paving & Brick Pavers				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
10	770	Square Yard		

DESCRIPTION: Concrete Parking Lot Paving				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
11	850	Square Yard		

DESCRIPTION: Curb				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
12	430	Linear Foot		

DESCRIPTION: Striping, Signs & Parking Bumpers				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
13	1	Lump Sum		

DESCRIPTION: Tie in to Existing Drainage Catch Basin				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
14	1	Lump Sum		

DESCRIPTION: Remove shrubs				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
15	6	Each		

DESCRIPTION: Electrical				<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # _____
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
16	1	Lump Sum		

DESCRIPTION: Grass Pavers				<input type="checkbox"/> Base Bid or <input checked="" type="checkbox"/> Alt. # <u>  1  </u>
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )



17	375	Square Yard		
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DESCRIPTION: Landscaping & Irrigation				<input type="checkbox"/> Base Bid or <input checked="" type="checkbox"/> Alt. # <u>2</u>
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
18	1	Lump Sum		

DESCRIPTION: Pond & Waterline				<input type="checkbox"/> Base Bid or <input checked="" type="checkbox"/> Alt. # <u>3</u>
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION ( <i>Quantity times Unit Price</i> )
19	1	Lump Sum		

All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner.



**BID BOND**

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,

\_\_\_\_\_

as Principal, and \_\_\_\_\_

as Surety, are hereby held and firmly bound unto

\_\_\_\_\_ as OWNER in the penal sum of  
\_\_\_\_\_ for the payment of which,

well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 2013. The Condition of the above obligation is such that whereas the Principal has submitted to \_\_\_\_\_ a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the

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

NOW, THEREFORE,

- a) If said BID shall be rejected, or
- b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

\_\_\_\_\_  
Principal

\_\_\_\_\_  
Surety

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

NOTE: Surety bonds shall be procured according to Louisiana State Law. Any surety bond written for a public works project shall be written by a surety or insurance company currently on the U. S. Department of the Treasury Financial Management Service list of approved bonding companies which is published annually in the Federal Register, or by a Louisiana domiciled insurance company with at least an A-rating in the latest printing of the A. M. Best's Key Rating Guide to write individual bonds up to ten percent of policyholders' surplus as shown in the A. M. Best's Key Rating Guide or by an insurance company that is either domiciled in Louisiana or owned by Louisiana residents and is licensed to write surety bonds.

**AFFIDAVIT**

STATE OF LOUISIANA

PARISH OF \_\_\_\_\_

BEFORE ME, the undersigned authority personally came and appeared,  
\_\_\_\_\_, who after first being sworn, deposes and  
says: that he is \_\_\_\_\_ (a partner of the firm of, etc.)

\_\_\_\_\_. The party making the foregoing Proposal or bid; that such bid is genuine and not collusive or a sham; that said bidder has not colluded, conspired, connived, or agreed directly or indirectly, with any bidder or person to put in a sham bid, or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement, or collusion, or communication or conference with any person to fix the bid price of affiance or any other bidder, or to fix any overhead profit or cost element of said bid price or that of any other bidder, or to secure any advantage against THE CITY OF SLIDELL, State of Louisiana, (Owner), or any person interested in the proposed Contract; and that all statements contained in said proposal or bid, or the contents thereof, or divulged information or data relative hereto to any association or any member or agent thereof, are true.

\_\_\_\_\_

SWORN TO AND SUBSCRIBED

BEFORE ME ON THIS \_\_\_\_\_

DAY OF \_\_\_\_\_, 2013

\_\_\_\_\_  
(Notary Public)

My commission expires \_\_\_\_\_.



**CONTRACT FORM**  
**FOR**  
**CITY HALL PARKING LOT & COURTYARD**  
**CITY OF SLIDELL, LOUISIANA**  
**SLIDELL JOB NO. 600-129**

THIS AGREEMENT, made this \_\_\_\_\_ day of \_\_\_\_\_, 2013 at the City of Slidell, Parish of St. Tammany, State of Louisiana by and between the City of Slidell, Louisiana, hereinafter called "Owner" and \_\_\_\_\_, hereinafter called the "Contractor."

WITNESSETH THAT, the Owner and Contractor do mutually agree as follows:

1. In consideration of the price for the work herein specified in the bid proposal to be paid by the Owner to the Contractor at the time and in a manner hereinafter provided, the Contractor does hereby agree to construct complete in every detail as follows:

**CITY HALL PARKING LOT & COURTYARD**  
**CITY OF SLIDELL, LOUISIANA**  
**SLIDELL JOB NO. 600-129**

in compliance with the Advertisement of Bids, Proposal Form, Contract, Performance Bond, General Conditions, Specifications, Plans, and such Addenda thereto as may be issued prior to execution of this Contract, all in a thorough and workmanlike manner.

2. This price shall include the cost and expense to furnish all materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, transportation, and other accessories and services necessary to complete this project, in accordance with the Contract Documents.
3. The Contractor shall commence work under this Contract within **ten (10) days** from the date of the written "Notice to Proceed" issued by the Owner. The Contractor shall complete all work under the Contract within **NINETY (90) calendar days** from the date of the "Notice to Proceed." The Owner has determined, and the Contractor agrees, that the liquidated damages for a delay in completion of this Contract will be **Five Hundred Dollars (\$500.00)** per calendar day in excess of the stated time of completion.
4. That upon satisfactory completion of the work and approval by the Engineer, the Owner will issue a written acceptance of the work to the Contractor, who will immediately thereafter file same with the Recorder of Mortgages in St. Tammany Parish.

5. A retainage of ten percent (10%) shall be withheld from each progress payment. Upon successful clearance of the lien, the Contractor shall submit a final invoice, with the clear lien certificate, for payment by the Owner in accordance with invoice payment procedures outlined in Article 14.13 Final Payment. The retainage amount for contracts \$500,000.00 or greater shall be five percent (5%).
6. The Owner agrees to pay the Contractor for the performance of the Contract as provided in the Specifications, and to make monthly payments on account thereof provided in the General Conditions. The contract amount, as presented in bid by Contractor, is \$ \_\_\_\_\_.
7. Owner and Contractor specifically agree and declare that Owner shall be deemed and considered the statutory employer of Contractor's employees.

8. **HOLD HARMLESS, DEFEND AND INDEMNIFICATION AGREEMENT**

\_\_\_\_\_ (Other Party) agrees to save and hold harmless, protect, defend, and indemnify the City of Slidell, Louisiana, its officers, agents, employees and volunteers, from and against any and all claims, demands, expenses and liability arising out of injury or death to any person or the damage, loss or destruction of any property which may occur or in any way grow out of any act or omission of \_\_\_\_\_ (Other Party), its agents, servants and employees, or any and all costs, expenses and/or attorney fees incurred by City of Slidell as a result of any claim, demands, and/or causes of action, except those claims, demands, and/or causes of action arising out of the negligence of the City of Slidell, Louisiana, its agents, representatives, employees and volunteers. \_\_\_\_\_ (Other Party) agrees to investigate, handle, respond to, provide defense for and defend any such claims, demands or suits at its sole expense and agrees to bear all other costs and expenses related thereto, even if the claim, demand or suit is groundless, false or fraudulent.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed in **three (3)** original counterparts on the day and year first hereinabove written.

WITNESSES:

_____  _____	_____ <b>CITY OF SLIDELL</b> Contractor  _____ Signature  _____ <b>Mayor</b> Title
--------------------	---

WITNESSES:

_____  _____	_____ <b>CITY OF SLIDELL</b> Owner  _____ Signature  _____ <b>Mayor</b> Title
--------------------	--

**PERFORMANCE AND PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS: That we (1) \*

\_\_\_\_\_ and (2) \*

\_\_\_\_\_ hereinafter called "Principal" and (3) \*

\_\_\_\_\_ a Surety Company authorized to do and doing business in the State of Louisiana, hereinafter called "Surety" are held and firmly bound unto the Mayor of the City of Slidell, Louisiana, hereinafter called "Owner" in penal sums of

\_\_\_\_\_ dollars (\$\_\_\_\_\_) Performance Bond and \_\_\_\_\_ dollars (\$\_\_\_\_\_) Payment Bond in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that, whereas, the Principal entered into a certain contract with the Owner dated the \_\_\_\_\_ day of \_\_\_\_\_, 2013, a copy of which is hereto attached and made a part hereof for the furnishing of:

CITY HALL PARKING LOT & COURTYARD  
SLIDELL JOB NO. 600-129

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions and agreements of said contract during the original term thereof which may be granted by the owner, with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it 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 any default, and shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment, and tools, consumed or used in connection with the prosecution of such work, and all insurance premiums on said work whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alterations or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying



the same shall in anywise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work of the Specifications.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is execute in **three (3)** originals each one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 2013.

ATTEST: \_\_\_\_\_  
(Principal Secretary)

\_\_\_\_\_  
Principal

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

\_\_\_\_\_

\_\_\_\_\_  
Address

\_\_\_\_\_  
Witness as to Principal

\_\_\_\_\_  
Address

ATTEST: \_\_\_\_\_  
(Surety) Secretary

(SEAL)

\_\_\_\_\_  
Surety

\_\_\_\_\_  
Witness as to Surety

BY: \_\_\_\_\_  
Attorney-in-Fact

\_\_\_\_\_  
Address

\_\_\_\_\_  
Address

NOTE: DATE OF BOND MUST NOT BE PRIOR TO DATE OF THIS AGREEMENT.

- \* 1. Correct name of Contractor.
- \* 2. A Corporation, a partnership, or an Individual, as case may be.
- \* 3. Correct name of Surety.



**CHANGE ORDER FORM**  
**CITY OF SLIDELL, LOUISIANA**

---

Change Order No.: \_\_\_\_\_

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

Contract Recordation Date: \_\_\_\_\_

Instrument No.: \_\_\_\_\_

---

Name of Project:

Project No.:

Engineer:

Contractor:

---

It is hereby mutually agreed that when this change order has been signed by the contracting parties the following described changes in the work required by the contract shall be executed by the contractor without changing the terms of the contract except as herein stipulated and agreed.

---

Description of Changes:

Justification for Changes:

---

Contractor's Proposal for the Above Described Change:

I/We hereby agree to the modifications of the contract as described above and furnish all materials and labor and perform all work in connection therewith in accordance with the requirements for similar work in existing contract except as otherwise stipulated herein, for the following consideration:

---

Name of Project: \_\_\_\_\_

Contractor: \_\_\_\_\_

\_\_\_\_\_  
Contractor's Signature



Change Order No. \_\_\_\_\_

---

---

Name of Project: \_\_\_\_\_

Architect/ Engineer: \_\_\_\_\_

\_\_\_\_\_  
Architect/ Engineer's Signature

---

RECOMMENDED BY: City of Slidell, Engineering Department

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

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

---

APPROVED BY:

BY: \_\_\_\_\_  
Freddy Drennan, Mayor

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

---

STATEMENT OF CONTRACT AMOUNT:

	COST	TIME (DAYS)
ORIGINAL CONTRACT AMOUNT	\$ _____	_____
PREVIOUS ADDITION	\$ _____	_____
TOTAL	\$ _____	_____
PREVIOUS DEDUCTIONS	\$ _____	_____
NET PRIOR TO CHANGE	\$ _____	_____
AMOUNT OF CHANGE (ADD)	\$ _____	_____
CONTRACT AMOUNT TO DATE	\$ _____	_____

---





**CITY OF SLIDELL  
CERTIFICATE OF SUBSTANTIAL  
COMPLETION**

**PROJECT:**  
\_\_\_\_\_  
\_\_\_\_\_

**PROJECT NUMBER:** \_\_\_\_\_

**INSTRUMENT NUMBER:** \_\_\_\_\_

**DATE OF RECORDATION:** \_\_\_\_\_

**CONTRACT DATE:** \_\_\_\_\_

**OWNER:**  
City of Slidell  
P O Box 828  
Slidell LA 70458-0828

**CONTRACTOR:**  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The Work performed under this Contract has been reviewed and found, to the Architect/Engineer's best knowledge, information and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The date of the Substantial Completion of the Project or portion designated above is the date of issuance established by this Certificate, which is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:

_____ <b>Architect/Engineer</b>	_____ <b>Signature</b>	_____ <b>Date of Issuance</b>
------------------------------------	---------------------------	----------------------------------

A list of items to be completed or corrected is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise agreed to in writing, the date of commencement of warranties for items on the attached list will be the date of issuance of the final Certificate of Payment or the date of final payment.

Cost estimate of Work that is incomplete or defective \$ \_\_\_\_\_.

The Contractor will complete or correct the Work on the list of items attached hereto within Forty-five (45) days from the above date of Substantial Completion.

_____ <b>Contractor</b>	_____ <b>Signature</b>	_____ <b>Date</b>
----------------------------	---------------------------	----------------------

The Owner accepts the Work or designated portion as substantially complete and will assume full possession on \_\_\_\_\_ (date).

_____ The City of Slidell <b>Owner</b>	_____ <b>Freddy Drennan, Mayor</b>	_____ <b>Date</b>
--	---------------------------------------	----------------------

_____ The City of Slidell <b>Owner</b>	_____ <b>City Engineer, Donna O'Dell</b>	_____ <b>Date</b>
--	---	----------------------



## INSTRUCTIONS TO BIDDERS

### 1. DEFINED TERMS

Terms used in these Instructions to Bidders which are defined in the Standard General Conditions of the Construction Specifications have the meanings assigned to them in the General Conditions.

### 2. QUALIFICATIONS OF BIDDERS

To demonstrate his qualifications for the Project, each Bidder must be prepared to submit within five days of Owner's request written evidence of the types set forth in the Supplementary Conditions or General Conditions, such as financial data, previous experience and evidence of authority to conduct business in the jurisdiction where the Project is located.

### 3. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

3.1 Before submitting his Bid, each bidder must (a) examine the Contract Documents thoroughly, (b) visit the site to familiarize himself with local conditions that may in any manner affect performance of the Work, (c) familiarize himself with Federal, State and local laws, ordinances, rules and regulations affecting performance of the Work; and (d) carefully correlate his observations with the requirements of the Contract Documents.

3.2 The submission of a Bid will constitute an incontrovertible representation by the Bidder that he has complied with every requirement of this Article 3.

### 4. INTERPRETATIONS

All questions about the meaning or intent of the Contract Documents shall be submitted to Engineer in writing. Replies will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the bidding documents. Questions received less than five days prior to the date of opening of Bids will not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

### 5. BID SECURITY

The amount and type of Bid Security is stated in the Invitation to bid. The required security must be in the form of a certified or bank cashier's check made payable to Owner or a bid bond issued by a surety licensed to conduct business in the state. Surety bonds shall be procured according to Louisiana State Law. Any surety bond written for a public works project shall be written by a surety or insurance company currently on the U.S. Department of the Treasury Financial Management Service list of approved bonding companies which is published annually in the Federal Register, or by a Louisiana domiciled insurance company with at least an A rating in the latest printing of the A. M. Best's Key Rating Guide to write individual bonds up to ten percent of policyholders' surplus as shown in the A. M. Best's Key Rating Guide. The Bid Security of the successful Bidder will be retained until he has executed the Agreement and furnished the required Contract Security, whereupon it will be returned; if he fails to

execute Security within 10 days of the Notice of Award, Owner may annul the Notice of Award and the Bid Security of that Bidder will be forfeited. The Bid Security of any Bidder whom the Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of the seventh day after the executed Agreement is delivered by Owner to Contractor and the required Contract Security is furnished or the sixty-first day after the Bid opening. Bid Security of other Bidders will be returned within seven days of the Bid opening.

## 6. CONTRACT TIME

6.1 The number of days for the completion of Work (the Contract Time) is set forth in the Bid Form and will be included in the executed Agreement. Any provisions for liquidated damages are set forth in the Contract Documents. The contract time is established in calendar days.

6.2 If Work cannot proceed due to weather or other conditions not under the control of the contractor for 65% or more of the normal work day, then that day may be added to the contract time in subsequent change order if verified by the City's inspector. Rain days will not be granted for weekends or holidays unless those days were requested as work days and approved in writing by the Slidell Engineering Dept. at least 48 hours prior to commencing the weekend or holiday work. Holidays for the City of Slidell include New Year's Day, Martin Luther King Day, Mardi Gras Day, President's Day, Good Friday, Memorial Day, 4<sup>th</sup> of July, Labor Day, Veterans Day, Thanksgiving and the day after Thanksgiving, Christmas Eve, Christmas Day, and New Year's Eve.

## 7. SUBCONTRACTORS, ETC.

7.1 If the Supplementary Conditions or Specifications require the identity of certain Subcontractors and other persons and organizations to be submitted to Owner in advance of the Notice of Award, the apparent low Bidder, any other Bidder so requested, will within seven days after the day of the Bid opening submit to Owner a list of all Subcontractors and other persons and organizations (including those who are to furnish the principal items of material and equipment) proposed for those portions of the Work as to which such identification is so required. Such list shall be accompanied by an experience statement with pertinent information as to similar projects and other evidence of qualification for each such Subcontractor, person and organization if requested by Owner. If Owner or Engineer after due investigation has reasonable objection to any proposed Subcontractor, other person or organization, he may before giving the Notice of Award request the apparent low Bidder to submit an acceptable substitute without an increase in his Bid price. If the apparent low Bidder declines to make any such substitution, he will thereby sacrifice his Bid Security.

7.2 In contracts where the Contract Price is on the basis of Cost of the Work Plus a Fee, Contractor, prior to the Notice of Award, must identify in writing the Owner those portions of the Work that he proposes to subcontract and after the Notice of Award may only subcontract other portions of the Work with Owner's written consent.

## 8. BID FORM

8.1 The Bid Form is included in the Contract Documents; additional copies may be obtained from Engineer.

8.2 Bid Forms must be completed legibly in ink or by computer. The Bid price of each item on the form must be stated in numerals. In case of mathematical discrepancies the unit price shall take precedence. When the bid price is requested in words and figures, this shall be done. In case of a discrepancy in these prices, the words shall take precedence. Any interlineations, alterations, or erasures must be initialed.

8.3 The authority of the person submitting the bid shall be deemed sufficient and acceptable provided that any of the following conditions are met:

1. The signature on the bid is that of any corporate officer listed on the most current annual report on file with the secretary of state, or the signature on the bid is that of any member of a partnership or partnership in commendam listed in the most current partnership records on file with the secretary of state; or
2. The signature on the bid is that of an authorized representative of the corporation, partnership, or other legal entity and the bid is accompanied by a corporate resolution, certification as to the corporate principal, or other documents indicating authority which are acceptable by the City; or
3. The corporation, partnership, or other legal entity has filed in the appropriate records of the secretary of state, an affidavit, resolution, or other acknowledged or authentic document indicating the names of all persons authorized to submit bids for public contracts.

8.4 Bids by partnerships must be executed in the partnership name and signed by a partner, his title must appear under this signature and the official address of the partnership must be shown below the signature.

8.5 All names must be typed or printed below the signature.

8.6 The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).

8.7 An executed affidavit, contained in the contract documents, shall be submitted prior to bid award.

## 9. SUBMISSION OF BIDS

Bids shall be submitted at the time and place indicated in the Invitation for Bid and shall be submitted in an opaque sealed envelope, marked with the Project title, name and address of the Bidder, Contractor's license number for state in which the work is to be done, and accompanied by the Bid Security and other required documents.

## 10. MODIFICATION AND WITHDRAWAL OF BIDS

Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids. Any interlineations, alterations, or erasure must be initialed.

## 11. OPENING OF BIDS

Bids shall be opened as indicated in the Invitation to Bid.

## 12. BIDS TO REMAIN OPEN

All Bids shall remain open for 45 days or the period of time stated in the Bid Form after the day of the Bid Opening, but Owner may, in his sole discretion, release any Bid and return the Bid Security prior to that date.

## 13. AWARD OF CONTRACT

13.1 Owner reserves the right to reject any and all Bids and Waive any and all informalities, and the right to disregard all nonconforming or conditional Bids or counter proposals.

13.2 In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and alternates and unit prices if requested in the Bid forms. He may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the Work as to which the identity of Subcontractors and other persons and organizations to do the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time. Owner reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.

13.3 If a contract is to be awarded, it will be awarded to the lowest responsible Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Project and the Owner.

13.4 If the contract is awarded, Owner will give the apparent successful Bidder a Notice of Award within the time period specified for the Bid to be binding in the Bid Form.

13.5 Simultaneously with delivery of the executed counterparts the agreement to Owner, Contractor shall deliver to Owner the required Contract Security.

13.6 Bids may be rejected if conditions described in Act No. 864 of House Bill 1490 or Act No. 945 of House Bill 1292 are discovered.

13.7 In accordance with La. R.S. 38:2227 and LA. R.S. 38:2212.10, each bidder on this project must submit the completed Attestation Clause (Past Criminal Convictions of Bidders and Verification of Employees) form found within this bid package. The Attestation Clause form shall be submitted to the City of Slidell within 10 days after the opening of bids.

13.8 If any city permits are required for construction, associated permits fees will not be assessed for this project.

\_\_\_\_\_  
**Name of Project**

\_\_\_\_\_  
**Project No.**

**ATTESTATIONS**

Appearer, as a Bidder on the above-entitled Public Works Project, does hereby attest that:

**LA. R.S. 38:2227 PAST CRIMINAL CONVICTIONS OF BIDDERS**

A. No sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes:

- (a) Public bribery (R.S. 14:118)
- (b) Corrupt influencing (R.S. 14: 120)
- (c) Extortion (R.S. 14:66)
- (d) Money laundering (R.S. 14:23)

B. Within the past five years from the project bid date, no sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes, during the solicitation or execution of a contract or bid awarded pursuant to the provisions of Chapter 10 of Title 38 of the Louisiana Revised Statutes:

- (a) Theft (R.S. 14:67)
- (b) Identity Theft (R.S. 14:67.16)
- (c) Theft of a business record (R.S.14:67.20)
- (d) False accounting (R.S. 14:70)
- (e) Issuing worthless checks (R.S. 14:71)
- (f) Bank fraud (R.S. 14:71.1)
- (g) Forgery (R.S. 14:72)
- (h) Contractors; misapplication of payments (R.S. 14:202)
- (i) Malfeasance in office (R.S. 14: 134)

**LA. R.S. 38:2212.10 Verification of Employees**

- A. Appearer is registered and participates in a status verification system to verify that all employees in the state of Louisiana are legal citizens of the United States or are legal aliens.
- B. If awarded the contract, Appearer shall continue, during the term of the contract, to utilize a status verification system to verify the legal status of all new employees in the state of Louisiana.
- C. If awarded the contract, Appearer shall require all subcontractors to submit to it a sworn affidavit verifying compliance with Paragraphs (A) and (B) of this Subsection.

\_\_\_\_\_  
**NAME OF BIDDER**

\_\_\_\_\_  
**NAME OF AUTHORIZED SIGNATORY OF BIDDER**

\_\_\_\_\_  
**DATE**

\_\_\_\_\_  
**TITLE OF AUTHORIZED SIGNATORY OF BIDDER**

\_\_\_\_\_  
**SIGNATURE OF AUTHORIZED  
SIGNATORY OF BIDDER**



## **SPECIAL PROVISIONS**

1. Location of Work: The work to be done under this Contract Agreement is located in Slidell, Louisiana.
  
2. Work to be done: The work to be completed under this Agreement consists of furnishing all labor, equipment, and materials, and performing all work required as outlined below:  
The work to be completed under this Agreement consists of furnishing all labor, equipment, and materials, and performing all work required as outlined below:  
Demolition, New Concrete Paving, Drainage Work, New Sidewalks & Fountain, and New Landscaping Work.
  
3. Retesting: Contractor shall pay all fees and charges incurred for retesting due to failure of initial test or other deficiencies that are the contractor's responsibility.
  
4. Protection of Work: Until the acceptance of the work in any "Job" by the Engineer as evidenced in writing, said work shall be under the charge and care of the Contractor. The Contractor shall take every necessary precaution against damages to any part thereof by the elements or from any other cause. The Contractor shall rebuild, restore, repair, and make good, at his own expense, all injuries or damages to any portion of the work occasioned by any of the above causes before its completion and acceptance.
  
5. Maintenance of Traffic: The Contractor shall provide for and maintain both through and local traffic at all times and shall conduct his operations in such manner as to cause the least possible interference with traffic at junctions with roads, streets and driveways. It shall be the Contractor's responsibility to provide suitable warning signs, rolling barricades, flagmen, etc. in order to insure maximum safety for his workmen and the public within the construction area.

In unusual situations, where traffic and physical conditions dictate, the Contractor shall install special signs, uneven pavement markers, or other specified treatment within the construction area when directed by the Engineer.

The Contractor and the Engineer will cooperate in notifying affected residents of this project, and both parties will make a concerted effort in having any parked vehicles removed from the construction area.

6. Temporary Signs and Barricades: The Contractor shall furnish, install and maintain all barricades, suitable lights, danger signals, and signs; provide watchmen; and comply with all other requirements regarding the protection of the work, workmen and safety of the public.
  
7. Indemnification: The Contractor agrees to indemnify, defend and save harmless the Owner and the Engineer, their consultants, agents and employees, from and against all loss or expense (including costs and attorney's fees) by reason of liability imposed by law upon the Owner and the Engineer, their consultants, agents and employees for damages because of bodily injury, including death at any time resulting therefrom, sustained by any person or persons or on account of damage to property, including loss of use thereof, arising out of or in consequence of the performance of this work, whether such injuries to person or damage

to property is due or claimed to be due to the negligence of the Contractor, his subcontractors, the Owner and the Engineer, their consultants, agents and employees, except only such injury or damage as shall have been occasioned by the sole negligence of the Owner or Engineer, and their consultants and further excepting such injury or damage due to any professional negligent act, error and omission of the Owner and Engineer, their consultants, agents and employees.

8. Clean Up: The Contractor shall at all times keep the area free from accumulations of waste material or rubbish caused by his employees or work. The Contractor shall keep all streets clean used in his operations. Trucks hauling excavated materials, cement, sand, stone, or other loose materials from or to the site shall be loaded so that no spilling will occur. Before trucks leave the site, their loads shall be carefully trimmed to prevent spillage.

The above requirements likewise apply to suppliers making deliveries to the site and the Contractor will be held responsible for compliance by his suppliers. Upon completion and before final acceptance of the work, the Contractor shall remove all false work, timbers, all surplus dirt and materials, rubbish, temporary structures, roads or drives, shall replace or renew any fences damaged and restore in an acceptable manner all property, both public and private, which may have been used or damaged in the course of construction.

9. Protection of Structures and Facilities: The Contractor shall assume full responsibility for the protection of all buildings and other structures, public and private, including tracks, pavements, curbs, sidewalks, driveways, fences, poles, power, communication lines, signs, hydrants, drainage structures, underground pipes, cables and conduits.

Wherever settlement or lateral movement of structures might occur, the Contractor shall install adequate shoring or underpinning or other means of support. Where necessary such support shall be installed in advance of construction.

10. Removal and Disposal of Water: The Contractor shall provide and maintain adequate pumping and drainage facilities for removal and disposal of water from trenches or other excavation, falsework, piling, debris or other obstructions placed during construction operations and not a part of the finished work.
11. Sanitation: The Contractor shall provide and maintain such sanitary accommodations for the use of his employees and others engaged on the project as may be necessary to comply with the requirements of the local and State health authorities and as directed by the Engineer. The Contractor shall prohibit the committing of nuisances within the work or upon lands about the work; and any employee found violating these provisions shall be removed from the project.
12. Utilities: It is the Contractors responsibility to contact Louisiana One Call to locate all utility lines. The Contractor will also be responsible for contacting all utility companies prior to construction to verify line locations.
13. Commencement, Prosecution, and Completion: The Contractor will be required to commence work at a "Job" under the contract within ten (10) calendar days after receipt by him of the Notice To Proceed for each "Job" unless otherwise agreed to by the Owner. He shall

prosecute the work with faithfulness and energy and shall complete it within the number of calendar days set in the Notice to Proceed for that “Job”.



# **GENERAL CONDITIONS**



# GENERAL CONDITIONS

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# **GENERAL CONDITIONS**

## **ARTICLE 1--DEFINITIONS**

Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

**ADDENDA**--Addenda include additions and changes to plans or specifications issued by the Engineer prior to the reception of bids, and must be considered by the Contractor as a part of the original plans and specifications. Upon signing of the Contract, all Addenda will be included as a part of the contract documents.

**ADVERTISEMENT**--The advertisement published by the Owner giving notice of a request for bids.

**AGREEMENT**--The written agreement between Owner and Contractor covering the Work to be performed; other Contract Documents are attached to the Agreement.

**APPLICATION FOR PAYMENT**--The form furnished by Engineer which is to be used by Contractor in requesting progress payments and which is to include the schedule of values required by Paragraph 14.1 and an affidavit of Contractor that progress payments theretofore received on account of the Work have been applied by Contractor to discharge in full all of Contractor's obligations reflected in prior Applications for Payment.

**BID**--The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

**BIDDER**--Any person, firm or corporation submitting a Bid for the Work.

**BONDS**--Bid, performance and payment bonds and other instruments of security, furnished by Contractor and his surety in accordance with the Contract Documents.

**CHANGE ORDER**--A written order to Contractor signed by Owner authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time issued after execution of the Agreement.

**CONTRACT DOCUMENTS**--The Agreement, Addenda (whether issued prior to the opening of Bids or the execution of the Agreement), Instructions to Bidders, Contractor's Bid, the Bonds, the Notice of Award, these General Conditions, the Supplementary Conditions, the Specifications, Drawings, Modifications, and Change Orders.

**CONTRACT PRICE**--The total monies payable to Contractor under the Contract Documents.

**CONTRACT TIME**--The number of days stated in the Agreement for the completion of the work, computed as provided in Paragraph 17.2.

**CONTRACTOR**--The person, firm or corporation with whom Owner has executed the Agreement.

**CREW**: The number of persons required for the performance of work at a site as determined by the Contractor in response to task difficulty and safety considerations at the time or location of the work.

**DAY**--A calendar day of twenty-four hours measured from midnight to the next midnight.

**DRAWINGS**--The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by Engineer and are referred to in the Contract Documents.

**EASEMENT:** A liberty, privilege, or advantage without profit which the Owner of one parcel of land may have in the land of another. In this agreement, all land, other than public streets, in which the Owner has sewer system lines or installations and right of access to such lines or installations.

**EASEMENT ACCESS:** Areas within an easement to which access is required for performance of work.

**ENGINEER**--The person, firm or corporation named as such in the Agreement.

**FIELD ORDER**--A written order issued by Engineer which clarifies, or interprets the Contract Documents in accordance with Paragraph-9.3 or orders minor changes in the Work in accordance with Paragraph 10.2.

### **INITIALS**

ASTM	American Society for Testing Materials
ACI	American Concrete Institute
AASHTO	American Association of State Highway and Transportation Officials
AWWA	American Water Works Association

**INVITATION TO BID:** The advertisement published by the Owner giving notice of a request for bids.

**LINEAR FOOT:** Being one foot. In these specifications used to denote unit of measurement related to the length of a sewer line.

**MODIFICATION**--(a) A written amendment of the Contract Documents signed by both parties, (b) a Change Order, (c) a written clarification or interpretation issued by Engineer in accordance with Paragraph 9.3 or (d) a written order for a minor change or alteration in the Work issued by Engineer pursuant to Paragraph 10.2. A Modification may only be issued after execution of the Agreement.

**NOTICE OF AWARD**--The written notice by Owner to the apparent successful Bidder stating that upon compliance with the conditions precedent to be fulfilled by him within the time specified; Owner will execute and deliver the Agreement to him.

**NOTICE TO PROCEED**--A written notice given by Owner to Contractor (with a copy to Engineer) fixing the date on which the Contract Time will commence to run and on which Contractor shall start to perform his obligations under the Contract documents.

**OWNER:** The Owner is the City of Slidell.

**PAYMENT FOR WORK:** Payment for the items shown in Schedule of Bid Prices shall include all incidental items necessary to complete the work.

**PERFORMANCE BOND:** The approved form of security furnished by the Contractor and his Surety as a guarantee of the proper performance of the work and payment for all materials or other obligations contracted by him in the prosecution thereof.

**PLANS**--The Plans, cross sections, working drawings and supplemental drawings, or exact reproductions thereof, which show the locations, character, dimensions, and details of the work to

be done, and which are to be considered as a part of the contract, supplementary to these specifications.

**PROJECT**--The entire construction to be performed as provided in the Contract Documents.

**RESIDENT PROJECT REPRESENTATIVE**--The authorized representative of Engineer who is assigned to the Project site or any part, thereof.

**SHOP DRAWINGS**--All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by Contractor, Sub-contractor, manufacturer, supplier or distributor and which illustrate the equipment, material or some portion of the Work.

**SITE:** Any location where work has been or will be done.

**SITE ACCESS:** An adequately clear area of a size sufficient to accommodate personnel and equipment required at the location where work is to be performed, including roadway or surface sufficiently unobstructed to permit conveyance of vehicles from the nearest paved roadway to the work location.

**SPECIFICATIONS**--Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work. The Specifications shall be considered to generally include, but not limited to, the contract documentation forms, the general conditions, supplemental conditions, technical specifications, and any addenda.

**STORM SEWER:** A sewer intended to carry only storm waters, surface runoffs, street washwaters, and drainage.

**STREET ACCESS:** Areas normally used for public vehicular traffic (including roads, streets, or rights-of-way extending twenty feet from either side of the traversing area) to which safe access is required for performance of work.

**SUBCONTRACTOR:** An individual, firm, or corporation having a direct contract with the Contractor or with any other lower-tier Subcontractor for performance of part of the work.

**SUBSTANTIAL COMPLETION**--The date as certified by the engineer when the construction of the Project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the Project or specified part can be utilized for the purposes for which it was intended; or if there be no such certification, the date when final payment is due in accordance with Paragraph 14.13.

**SURETY:** The corporate body, licensed to do business in the State where the work is located, which is bound with and for the Contractor, and which is primarily liable and responsible for the payment of all obligations pertaining to and for the acceptable performance of the work required by the Contractor.

**SWALE (DIP, SAG):** A significant deviation in pipe grade such as to cause entrapment of solids, semisolids, and liquids, thereby impeding the accuracy and/or effectiveness of flow measurements, cleaning, and internal-inspection.

**TESTING LABORATORY:** Any testing laboratory designated or approved by the Engineer to perform tests of materials entering the work.

**WORK**--Any and all obligations, duties and responsibilities necessary to the successful completion of the Project assigned to or undertaken by Contractor per the Contract Documents, including all labor, materials, equipment and other incidentals, and the furnishing thereof.

## **ARTICLE 2--PRE-CONSTRUCTION PROVISIONS**

### **AWARD OF CONTRACT**

2.0 The award of the Contract, if it be awarded, will be by the Owner to the lowest responsible Bidder whose Proposal shall have complied with all the requirements necessary to render it formal. The successful Bidder will be notified by email or letter mailed to the address shown on his Proposal that his bid has been accepted and that he has been awarded the Contract. No award will be made to any Contractor until their bond and insurance requirements are made satisfactory to the Owner.

### **EXECUTION OF AGREEMENT:**

2.1 At least the number of counterparts specified in the contract form of the Agreement and such other Contract Documents as practicable will be executed and delivered by Contractor to Owner within fifteen days of the Notice of Award; and Owner will execute and deliver one counterpart to Contractor within ten days of receipt of the executed Agreement from Contractor. Owner, Contractor and Engineer shall each receive an executed counterpart of the Contract Documents and additional confirmed copies as required.

**One set of the Executed Contract Documents shall be filed by the Owner at the expense of the Contractor.** Once the actual costs for recording the contract are known, the Slidell City Attorney will contact the Contractor to request a check be prepared and sent to the City Attorney for these costs. The City Attorney will then have the Contract recorded with the Clerk of Court or the Recorder of Mortgages in St. Tammany Parish.

### **DELIVERY OF BONDS:**

2.2 When he delivers the executed Agreements to Owner, Contractor shall also deliver to Owner such Bonds as may be required in accordance with Paragraph 5.1.

### **COPIES OF DOCUMENTS:**

2.3 Owner shall furnish to Contractor up to three (3) copies (unless otherwise provided in the Supplementary Conditions) of the Contract Documents. Additional copies will be furnished, upon request, at the cost of reproduction.

### **CONTRACTOR'S PRE-START REPRESENTATIONS:**

2.4 Contractor represents that he has familiarized himself with, and assumes full responsibility for having familiarized himself with, the nature and extent of the Contract Documents, Work, locality, and with all local conditions and Federal, state and local laws, ordinances, rules and regulations that may in any manner affect performance of the Work, and represents that he has correlated his study and observations with the requirements of the Contract Documents. Contractor also represents that he has studied all surveys and investigation reports of subsurface and latent physical conditions referred to in the General Conditions of the Specifications and made such additional surveys and investigations as he deems necessary for the performance of the work at the Contract Price in accordance with the requirements of the Contract Documents and that he has correlated the results of all such data with the requirements of the Contract Documents.

**COMMENCEMENT OF CONTRACT TIME: NOTICE TO PROCEED:**

- 2.5 The Contract Time will commence to run on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the day on which Owner delivers the executed Agreement to Contractor.

**STARTING THE PROJECT:**

- 2.6 Contractor shall start to perform his obligations under the Contract Documents within ten (10) days of the date when the Contract Time commences to run. No Work shall be done at the site prior to the date on which the Contract Time commences to run.

**BEFORE STARTING CONSTRUCTION:**

- 2.7 Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. He shall at once report in writing to Engineer any conflict, error or discrepancy which he may discover; however, he shall not be liable to Owner or Engineer for his failure to discover any conflict, error or discrepancy in the Drawings or Specifications.
- 2.8 Within ten (10) days of delivery of the executed Agreement by Owner to Contractor, Contractor shall submit to Engineer for approval, an estimated progress schedule indicating the starting and completion dates of the various stages of the Work, and a preliminary schedule of Shop Drawing submissions, if applicable. This provision may be waived by the Owner or Engineer.
- 2.9 Before starting the Work at the site, Contractor shall furnish Owner and Engineer certificates of insurance as required by Article 5. Within twenty (20) days after delivery of the executed Agreement by Owner to Contractor, but before starting the Work at the site, a conference will be held to review the above schedules, to establish procedures for handling Shop Drawings and other submissions and for processing Applications for Payment, and to establish a working understanding between the parties as to the Project. Present at the conference will be Owner or his representative, Engineer, Resident Project Representatives, Contractor and his Superintendent. The Owner may elect to dispense with this conference.

**ARTICLE 3--CORRELATION, INTERPRETATION AND INTENT OF CONTRACT DOCUMENTS**

- 3.1 It is the intent of the Contract Documents to describe the work. The work to be done under the Contract shall consist of the complete construction of each and every unit described in the plans, these General Specifications, the Construction specifications, the Special Provisions, Contract and Notice to Contractors, together with all authorized alterations. The Contractor shall furnish and provide, unless definitely and expressly stated to the contrary in the Proposal and Special Provisions or the Plans, all materials, implements, machinery, equipment, tools, supplies, transportation and labor necessary to the prosecution and completion of the Work. The work shall be scheduled to be performed on a standard Monday through Friday work week, unless otherwise approved by the Owner.
- 3.2 The Contract Documents are complementary; what is called for by one is as binding as if called for by all. If Contractor finds a conflict, error or discrepancy in the Contract Documents, he shall call it to Engineer's attention in writing at once and before proceeding with the Work affected thereby. In resolving such conflicts, errors and discrepancies, the documents shall be given precedence in the following order: Agreement, Modifications, Addenda, Specifications, and Drawings, Instructions to Bidders, Supplementary Conditions, General Conditions. Figure dimensions on Drawings shall govern over scale dimensions and detailed Drawings shall govern over general Drawings. Any work that may reasonably

be inferred from the Specifications or Drawings as being required to produce the intended result shall be supplied whether or not it is specifically called for. Work, materials or equipment described in words which so applied have a well-known technical or trade meaning shall be deemed to refer to such recognized standards.

## **ARTICLE 4--AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS**

### **AVAILABILITY OF LANDS:**

- 4.1 Owner shall furnish, as indicated in the Contract Documents and not later than the date when needed by Contractor, the lands upon which the Work is to be done, rights-of-way for access thereto, and such other lands which are designated for the use of Contractor. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by Owner, unless otherwise specified in the Contract Documents. If Contractor believes that any delay in Owner's furnishing these lands or easements entitles him to an extension of the Contract Time, he may make a claim therefore as provided in Article 12.

### **PHYSICAL CONDITIONS--SURVEYS AND REPORTS**

- 4.2 The Engineer shall provide, upon request available surveys and investigation reports of subsurface and latent physical conditions at the Project site which have been relied upon by Engineer in preparation of the Drawings and Specifications.

### **UNFORSEEN PHYSICAL CONDITIONS**

- 4.3 Contractor shall promptly notify Owner and Engineer in writing of any subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents or anticipated in the design of the Project. Engineer will promptly investigate those conditions and advise Owner in writing if further surveys or subsurface tests are necessary. Promptly thereafter, Owner shall obtain the necessary additional surveys and tests and furnish copies to Engineer and Contractor.

### **REFERENCE POINTS**

- 4.4 If required to perform the Work, Owner shall provide engineering surveys to establish reference points. Contractor shall be responsible for surveying and laying out the Work (unless otherwise provided), and shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of Owner. He shall report to Engineer whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations. Contractor shall replace and accurately relocate all reference points so lost, destroyed, or moved.

## **ARTICLE 5--BONDS AND INSURANCE**

### **PERFORMANCE, PAYMENT AND OTHER BONDS**

- 5.1 Contractor shall furnish performance and payment Bonds as security for the faithful performance and payment of all his obligations under the Contract Documents. These Bonds shall be in amounts at least equal to the Contract Price, and (except as otherwise provided) in such form and with such sureties as are licensed to conduct business in the state where the Project is located and are named in the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Federal Register by the Audit Staff Bureau of Accounts, U. S. Treasury Department, or by a Louisiana domiciled insurance company with at least an A rating in the latest printing of A. M. Best's Key Rating Guide and in accordance with Louisiana R. S. 38:2219.

The Contractor's bondsman shall obligate himself to all the terms and covenants of these specifications and of contracts covering the work executed hereunder. The Owner reserves the right to order extra work or make changes by altering, adding to or deducting from the work under the conditions and in the manner herein described without notice to the Contractor's surety and without in any manner affecting the liability of bondsman or releasing him from any of his obligations hereunder. The bond shall also secure for the Owner the faithful performance of the contract in strict accordance with plans and specifications. It shall protect the Owner against all lien laws of the State and shall provide for payment of reasonable attorney's fees for enforcement of contract and institution of concursus proceedings, if such proceedings become necessary. Likewise, it shall provide that if the Engineer is put to labor or expense by enforcement of contract and institution of concursus proceedings or through delinquency or insolvency of the contract, they shall be equitably paid for such extra expense and services involved.

The surety of the Contractor shall be and does hereby declare and acknowledge himself by acceptance to be bound to the Owner as guarantor, jointly and in solido with the Contractor, for fulfillment of terms of the foregoing conditions. The Owner reserves the right to submit to the Bonding Agent of the Contractor at any time a report of the Contractor's progress on the project. The Contractor, upon written request, may receive copies of any report sent.

- 5.2 If the surety on any Bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located is revoked, Contractor shall within five days thereafter substitute another Bond and surety, both of which shall be acceptable to Owner.

#### **CONTRACTOR'S LIABILITY INSURANCE**

- 5.3 Contractor shall purchase and maintain such insurance as will protect him from claims under workmen's compensation laws, disability benefit laws or other similar employee benefit laws; from claims for damages because of bodily injury, occupational sickness or disease, or death of his employees, and claims insured by usual personal injury liability coverage; from claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees including claims insured by usual personal injury liability coverage; and from claims for injury to or destruction of tangible property, including loss of use resulting therefrom--any or all of which may arise out of or result from Contractor's operations under the Contract Documents, whether such operations be by himself or by any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be legally liable. This insurance shall include the specific coverages and be written for not less than any limits of liability and maximum deductibles specified in the Supplementary Conditions or General Conditions or required by law, whichever is greater, shall include contractual liability insurance and shall include Owner and Engineer as additional insured parties. Before starting the work, Contractor shall file with Owner and Engineer, certificates of such insurance acceptable to Owner. These certificates shall contain a provision that should any of the policies described in the certificate be cancelled prior to the expiration date thereof, notice shall be delivered in accordance with the policy provisions.

The limits of liability coverage shall not be less than the following:

- Bodily injury liability of \$1,000,000 per person and \$1,000,000 per accident.
- Property damage liability of \$1,000,000 per accident.
- Builder's Risk in amounts at least equal to the Contract Price
- Workman's Comp in the amount of \$1,000,000

## **OWNER'S LIABILITY INSURANCE**

- 5.4 Owner shall be responsible for purchasing and maintaining his own liability insurance and, at his option, may purchase and maintain such insurance as will protect him against claims which may arise from operations under the Contract Documents.

## **PROPERTY INSURANCE**

- 5.5 NOT USED
- 5.6 NOT USED
- 5.7 NOT USED
- 5.8 NOT USED
- 5.9 NOT USED
- 5.10 Owner and Contractor waive all rights against each other for damages caused by fire or other perils to the extent covered by insurance provided under Paragraphs 5.5 through 5.11, inclusive. Contractor shall require similar waivers by Subcontractors in accordance with Paragraph 6.12.
- 5.11 NOT USED

## **ADDITIONAL BONDS AND INSURANCE**

- 5.12 NOT USED

# ***ARTICLE 6--CONTRACTOR'S RESPONSIBILITIES***

## **SUPERVISION AND SUPERINTENDENCE:**

- 6.1 Contractor shall supervise and direct the Work efficiently and with his best skill and attention. He shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but he shall not be solely responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents.
- 6.2 Contractor shall keep on the work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be contractor's representative at the site and shall have authority to act on behalf of Contractor. All communications given to the superintendent shall be as binding as if given to Contractor.

## **LABOR, MATERIALS AND EQUIPMENT:**

- 6.3 Contractor shall provide competent, suitably qualified personnel to survey and lay out the work, if necessary, and perform services as required by the Contract Documents. He shall at all times maintain good discipline and order at the site.
- 6.4 Contractor shall furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of the work.
- 6.5 All materials and equipment shall be new, except as Otherwise provided in the Contract Documents. If required by Engineer, Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

If materials are brought on the work site which do not conform to the Contract Documents, the Engineer shall order the same to be removed forthwith, and in case of the neglect or refusal of the Contractor or those employed by him to remove such materials, to cause the same to be removed at the expense of the Contractor and to deduct the cost of such removal and all other expenses incidental thereto from the amount which may be due or may become due the Contractor.

- 6.6 All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator or processors, except as otherwise provided in the Contract Documents.

**SUBSTITUTE MATERIALS OR EQUIPMENT:**

- 6.7 If the General Conditions of the Specifications, law, ordinance, or applicable rules or regulations permit Contractor to furnish or use a substitute that is equal to any material or equipment specified, and if Contractor wishes to furnish or use a proposed substitute, he shall, prior to the conference called for by Paragraph 2.9 (unless another time is provided in the General Conditions), make written application to Engineer for approval of such a substitute certifying in writing that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified; stating whether or not its incorporation in or use in connection with the Project is subject to the payment of any license fee or royalty; and identifying all variations of the proposed substitute from that specified and indicating available maintenance service. No substitute shall be ordered or installed without the written approval of Engineer who will be the judge of equality and may require Contractor to furnish such other data about the proposed substitute as he considers pertinent. No substitute shall be ordered or installed without such performance guarantee and bonds as Owner may require which shall be furnished at Contractor's expense.

**CONCERNING SUBCONTRACTORS:**

- 6.8 Contractor shall not employ any Subcontractor or other person or organization (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom Owner or Engineer may have reasonable objection. Use of any Subcontractor, other person or organization by Contractor shall not constitute a waiver of any right of Owner or Engineer to reject defective Work or Work not in conformance with the Contract Documents. If Owner or Engineer after due investigation has reasonable objection to any Subcontractor, other person or organization proposed by Contractor after the Notice of Award, Contractor shall submit an acceptable substitute. Contractor shall not without the consent of Owner and Engineer make any substitution for any Contractor, other person or organization who has been accepted by Owner and Engineer unless Engineer determines that there is good cause for doing so.
- 6.9 Contractor shall be fully responsible for all acts and omissions of his Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that he is responsible for the acts and omissions of persons directly employed by him. Nothing in the Contract Documents shall create any contractual relationship between Owner or Engineer and any Subcontractor or other person or organization having a direct contract with Contractor, nor shall it create any obligation on the part of Owner or Engineer to pay or to see to the payment of any monies due any Subcontractor or other person or organization, except as may otherwise be required by law. Owner or Engineer may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of

amounts paid to Contractor on account of specific Work done in accordance with the schedule of values.

- 6.10 The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or delineating the Work to be performed by any specific trade.
- 6.11 Contractor agrees to bind specifically every Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of Owner.
- 6.12 All work performed for Contractor by a Subcontractor shall be pursuant to an appropriate agreement between Contractor and the Subcontractor which shall contain provisions that waive all rights the contracting parties may have against one another for damages caused by fire or other perils covered by insurance provided in accordance with Paragraphs 5.5 through 5.11, inclusive, Contractor shall pay each Subcontractor a just share of any insurance monies received by Contractor under Paragraphs 5.5 through 5.11, inclusive.

**PATENT FEES AND ROYALTIES:**

- 6.13 Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents. Contractor shall indemnify and hold harmless Owner and Engineer and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorneys' fees) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

**PERMITS:**

- 6.14 Contractor shall obtain and pay all construction permits and licenses and shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of his Bid. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall also pay all public utility charges.

**LAWS AND REGULATIONS:**

- 6.15 Contractor shall give all notices and comply with all laws, ordinances, rules and regulations applicable to the Work. If Contractor observes that the Specifications or Drawings are at variance therewith, he shall give Engineer prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate Modification. If Contractor performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to Engineer, he shall bear all costs arising therefrom; however, it shall not be his primary responsibility to make certain that the Specifications and Drawings are in accordance with such laws, ordinances, rules and regulations.

**TAXES:**

- 6.16 Contractor shall pay all sales, consumer, use and other similar taxes required to be paid by him in accordance with the law of the place where the Work is to be performed.

**USE OF PREMISES:**

- 6.17 Contractor shall confine operations of his workmen to areas permitted by law, ordinances, permits, or the requirements of the Contract Documents.
- 6.18 Contractor shall not load nor permit any part of any structure to be loaded with weights that will endanger the structure, nor shall he subject any part of the Work to stresses or pressures that will endanger it.

**RECORD DRAWINGS:**

- 6.19 Contractor shall keep on record copy of all Specifications, Drawings, Addenda, Modifications, and Shop Drawings at the site in good order and annotated to show all changes made during the construction process. These shall be available to Engineer and shall be delivered to him for Owner upon completion of the Project.

**SAFETY AND PROTECTION:**

- 6.20 Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. He shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
- 6.20.1 All employees on the Work and other persons who may be affected thereby,
- 6.20.2 All the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and
- 6.20.3 Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavement, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. He shall erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for its safety and protection. He shall notify owners of adjacent utilities when prosecution of the Work may affect them. All damages, injury or loss to any property referred to in Paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in a whole or in part, by Contractor, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by Contractor; except damage or loss attributable to the fault of Contract Documents or to the acts or omissions of Owner or CDA or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor. Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and CDA has issued a notice to Owner and Contractor in accordance with Paragraph 14.13 that Work is acceptable and complete.

- 6.21 Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be Contractor's superintendent unless otherwise designated in writing by Contractor to Owner.

**EMERGENCIES:**

- 6.22 In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, Contractor without special instruction or authorization from CDA or Owner, is obligated to act, at his discretion, to prevent threatened damage, injury or loss.

**SHOP DRAWINGS AND SAMPLES:**

- 6.23 After checking and verifying all field measurements, Contractor shall submit to Engineer for approval, in accordance with the accepted schedule of Shop Drawings submissions (see Paragraph 2.8), five copies (or Engineer's option, one reproducible copy) of all Shop Drawings, which shall have been checked by and stamped with the approval of Contractor and identified as Engineer may require. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction and the like to enable Engineer to review the information as required.
- 6.24 Contractor shall also submit to Engineer for approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and stamped with the approval of Contractor, identified clearly as to material, manufacturer, any pertinent catalog numbers and the use for which intended.
- 6.25 At the time of each submission, Contractor shall in writing call Engineer's attention to any deviations that the Shop Drawings or sample may have from the requirements of the Contract Documents.
- 6.26 Engineer will review and approve with reasonable promptness Shop Drawings and samples, but his review and approval shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents. The Approval of a separate item as such will not indicate approval of the assembly in which the item functions. Contractor shall make any corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and re-submit new samples until approved. Contractor shall direct specific attention in writing or on re-submitted Shop Drawings to revisions other than the corrections called for by Engineer on previous submissions. Contractor's stamp of approval on any Shop Drawing or sample shall constitute a representation to Owner and Engineer that Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data or he assumes full responsibility for doing so, and that he has reviewed or coordinated each Shop Drawing or sample with the requirements of the work and the Contract Documents.
- 6.27 Where a Shop Drawing or sample submission is required by the Specifications, no related Work shall be commenced until the submission has been approved by Engineer. A copy of each approved Shop Drawing and each approved sample shall be kept in good order by Contractor at the site and shall be available to Engineer.
- 6.28 Engineer's approval of Shop Drawings or sample shall not relieve Contractor from his responsibility for any deviations from the requirements of the Contract Documents, unless Contractor has in writing called Engineer's attention to such deviation at the time of submission and Engineer has given written approval to the specific deviation, nor shall any approval by Engineer relieve Contractor from responsibility for errors or omissions in the Shop Drawings.

**CLEANING:**

- 6.29 Contractor shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the work, and at the completion of the Work he shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by Owner. Contractor shall restore to their original condition those portions of the site not designated for alteration by the Contract Documents.

**INDEMNIFICATION:**

- 6.30 Contractor agrees to save and hold harmless, protect, defend, and indemnify the City of Slidell, Louisiana, its officers, agents, employees and volunteers, from and against any and all claims, demands, expenses and liability arising out of injury or death to any person or the damage, loss or destruction of any property which may occur or in any way grow out of any act or omission of Contractor, its agents, servants and employees, or any and all costs, expenses and/or attorney fees incurred by Contractor as a result of any claim, demands, and/or causes of action, except those claims, demands, and/or causes of action arising out of the negligence of the City of Slidell, Louisiana, its agents, representatives, employees and volunteers. Contractor agrees to investigate, handle, respond to, provide defense for and defend any such claims, demands or suits at its sole expense and agrees to bear all other costs and expenses related thereto, even if the claim, demand or suit is groundless, false or fraudulent.
- 6.31 NOT USED
- 6.32 NOT USED

**ARTICLE 7--WORK BY OTHERS**

- 7.1 Owner may perform additional work related to the Project by himself, or he may let other direct contracts therefore which shall contain General Conditions similar to these. Contractor shall afford the other contractors who are parties to such direct contracts (or Owner, if he is performing the additional work himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly connect and coordinate his Work with theirs.
- 7.2 If any part of Contractor's Work depends for proper execution or results upon the work of any such other contractor (or Owner), Contractor shall inspect and promptly report to Engineer in writing any defects or deficiencies in such work that render it unsuitable for such proper execution and results. His failure to so report shall constitute an acceptance of the other work as fit and proper for the relationship of his work except as to defects and deficiencies which may appear in the other work after the execution of his Work.
- 7.3 Contractor shall do all cutting, fitting, and patching of his Work that may be required to make its several parts come together properly and fit it to receive or be received by such other work. Contractor shall not endanger any work of other by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and of the other contractors whose work will be affected.
- 7.4 If the performance of additional work by other contractors or Owner is not noted in the Contract Documents prior to the execution of the contract, written notice thereof shall be given to Contractor prior to starting any such additional work.

**ARTICLE 8--OWNER'S RESPONSIBILITIES**

- 8.1 NOT USED
- 8.2 NOT USED
- 8.3 Owner shall furnish the data required of him under the Contract Documents promptly and shall make payments to Contractor promptly after they are due as provided in Paragraphs 14.4 and 14.13.

- 8.4 Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.1 and 4.4. Paragraph 4.2 refers to Owner's identifying and making available to Contractor copies of surveys and investigation reports of subsurface and latent physical conditions at the site or otherwise affecting performance of the work which have been relied upon by Engineer in preparing the Drawings and Specifications.
- 8.5 Owner's responsibilities in respect of liability and property insurance are set forth in Paragraph 5.4 and 5.5.
- 8.6 In addition to his rights to request changes in the Work in accordance with Article 10, Owner (especially in certain instances as provided in Paragraph 10.4) shall be obligated to execute reasonable Change Orders.
- 8.7 Owner's responsibility in respect of certain inspections, tests and approvals is set forth in Paragraph 13.2.
- 8.8 In connection with Owner's right to stop Work or suspend Work, see Paragraphs 13.8 and 15.1. Paragraph 15.2 deals with Owner's right to terminate services of Contractor under certain circumstances.

## ***ARTICLE 9--ENGINEER'S STATUS DURING CONSTRUCTION***

### **OWNER'S REPRESENTATIVE:**

- 9.1 Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in these General Conditions and shall not be extended without written consent of Owner and Engineer.

### **VISITS TO SITE:**

- 9.2 Engineer will make periodic visits to the site to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. He will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the work. His efforts will be directed toward providing assurance for Owner that the completed Project will conform to the requirements of the Contract Documents. On the basis of his on-site observations as an experienced and qualified design professional, he will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defects and deficiencies in the Work of contractors.

### **CLARIFICATIONS AND INTERPRETATIONS**

- 9.3 Engineer will issue with reasonable promptness such written clarifications or interpretations of the Contract Documents (in the form of Drawings or otherwise) as he may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If Contractor believes that a written clarification and interpretation entitles him to an increase in the Contract Price, he may make a claim therefore as provided in Article 11.

### **REJECTING DEFECTIVE WORK:**

- 9.4 Engineer will have authority to disapprove or reject Work which is "defective" (which term is hereinafter used to describe work that is unsatisfactory, faulty or defective, or does not conform to the requirements of the Contract Documents or does not meet the requirements of any inspection, test or approval referred to in Paragraph 13.2 or has been damaged prior

to approval of final payment) as provided in Paragraph 13.7, whether or not the Work is fabricated, installed or completed.

**SHOP DRAWINGS, CHANGE ORDERS AND PAYMENTS:**

- 9.5 In connection with Engineer's responsibility for Shop Drawings and samples, see Paragraphs 6.23 through 6.28 inclusive.
- 9.6 In connection with Engineer's responsibility for Change Orders, see Articles 10, 11 and 12.
- 9.7 In connection with Engineer's responsibilities in respect of Applications for Payment, etc., see Article 14.

**RESIDENT PROJECT REPRESENTATIVES:**

- 9.8 If Owner and Engineer agree, Engineer will furnish a Resident Project Representative and assistants to assist Engineer in carrying out his responsibilities at the site. The duties, responsibilities and limitations of authority of any such Resident Project Representative and assistants shall be as set forth in an exhibit to be incorporated in the Contract Documents, (see Article 19: Supplemental Conditions).

**DECISIONS ON DISAGREEMENTS:**

- 9.9 Engineer will be the interpreter of the requirements of the Contract Documents and the judge of the performance thereunder. In his capacity as interpreter and judge he will exercise his best efforts to insure faithful performance by both Owner and Contractor. He will not show partiality to either and will not be liable for the result of any interpretation or decision rendered in good faith. Claims, disputes and other matters relating to the execution and progress of the Work or the interpretation of or performance under the Contract Documents shall be referred to Engineer for decision; which he will render in writing within a reasonable time. Such decisions shall be binding on the Owner and Contractor.
- 9.10 NOT USED

**LIMITATIONS ON ENGINEER'S RESPONSIBILITIES:**

- 9.11 Neither Engineer's authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by him in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of Engineer to Contractor, any Subcontractor, any materialman, fabricator, supplier or any of their agents or employees or any other person performing any of the work.
- 9.12 Engineer will not be responsible for Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and he will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- 9.13 Engineer will not be responsible for the acts or omissions of Contractor, or any Subcontractors, or any of his or their agents or employees, or any other persons at the site or otherwise performing any of the Work.

**ARTICLE 10--CHANGES IN THE WORK**

- 10.1 The Work shall be paid according to the bid items in the Bid. If services are required to complete the Work that are not covered in the Bid, the Owner may, at his/ her discretion, without invalidating the Agreement, authorize this additional Work by written Change Order.

Upon receipt of a Change Order, Contractor shall proceed with the Work involved. All such Work shall be executed under the applicable conditions of the Contract Documents.

- 10.2 Engineer may authorize minor changes or alterations in the Work not involving extra cost and not inconsistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order.
- 10.3 Additional Work performed by Contractor without authorization of a Change Order will not entitle him to an increase in the Contract Price or an extension of the Contract Time.
- 10.4 Owner shall execute appropriate Change Orders prepared by Engineer covering changes in the Work involving work not included in the bid items in the Bid.
- 10.5 It is the Contractor's responsibility to notify his Surety of any changes affecting the general scope of the Work or change in the Contract Price and the amount of the applicable Bonds shall be adjusted accordingly.

## **ARTICLE 11--CHANGE OF CONTRACT PRICE**

- 11.1 The Contract Price will be the sum total of lump sum price or unit prices and associated quantities in the bid, as required to perform the Work. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be included. No other compensation is available unless expressly approved by the Owner.
- 11.2 The Contract Price may only be changed by a Change Order. Any claim for an increase in the Contract Price shall be based on written notice delivered to Owner and Engineer within fifteen days of the occurrences to the event giving rise to the claim. Notice of the amount of the claim with supporting data shall be delivered within forty-five days of such occurrences unless Engineer allows an additional period of time to ascertain accurate cost data. Any change in the Contract Price resulting from any such claim shall be incorporated in a Change Order.
- 11.3 The value of any Work covered by a Change Order or any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:
  - 11.3.1 Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.
  - 11.3.2 By mutual acceptance of a lump sum.
  - 11.3.3 On the basis of the Cost of the Work (determined as provided in Paragraphs 11.4 and 11.5) plus a Contractor's Fee for overhead and profit (determined as provided in Paragraph 11.6).

### **COST OF THE WORK:**

- 11.4 The term Cost of the Work means the sum of all costs necessarily incurred and paid by the Contractor in the proper performance of the Work. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in Paragraph 11.5:
  - 11.4.1 Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and

Contractor. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing work after regular working hours (8-hour days, Monday through Friday), on Sunday or legal holidays shall be included in the above to the extent authorized by Owner.

- 11.4.2 Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and manufacturers, field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds, and all returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
- 11.4.3 Payments made by Contractor to the Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from Subcontractors acceptable to him and shall deliver such bids to Owner who will then determine with the advice of Engineer, which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of Work Plus a Fee, the Cost of the Work shall be determined in accordance with Paragraphs 11.4 and 11.5. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.
- 11.4.4 Costs of special consultants (including, but not limited to, engineers, architects, testing laboratories, surveyors, lawyers and accountants) employed for services specifically related to the Work.
- 11.4.5 Supplemental costs including the following:
  - 11.4.5.1 The proportion of necessary transportation, traveling and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
  - 11.4.5.2 Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workmen, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of Contractor.
  - 11.4.5.3 Rentals of all construction equipment and machinery and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

- 11.4.5.4 Sales, use or similar taxes related to the Work, and for which Contractor is liable, imposed by any governmental authority.
- 11.4.5.5 Deposits lost for causes other than Contractor's negligence, royalty payments and fees for permits and licenses.
- 11.4.5.6 Losses, damages and expenses, not compensated by insurance or otherwise, sustained by Contractor in connection with the execution of, and to, the Work, provided they have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's Fee. If, however, any such loss or damage requires reconstruction and Contractor is placed in charge thereof, he shall be paid for his services a fee proportionate to that stated in Paragraph 11.6.2.
- 11.4.5.7 The cost of utilities, fuel and sanitary facilities at the site.
- 11.4.5.8 Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.
- 11.4.5.9 Cost of premiums for bonds and insurance which Owner is required to pay in accordance with Paragraph 5.12.

11.5 The term Cost of the Work shall not include any of the following:

- 11.5.1 Payroll costs and other compensation of Contractor's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agent, expeditors, timekeepers, clerks, and other personnel employed by Contractor whether at the site or in his principal or a branch office for general administration of the work and not specifically included in the schedule referred to in Subparagraph 11.4.1--all of which are to be considered administrative costs covered by the Contractor's Fee.
- 11.5.2 Expenses of Contractor's principal and branch offices other than his office at the site.
- 11.5.3 Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the work and charges against Contractor for delinquent payments.
- 11.5.4 Cost of premiums for all bonds and for all insurance policies whether or not Contractor is required by the Contract Documents to purchase and maintain the same (except as otherwise provided in Subparagraph 11.4.5.9).
- 11.5.5 Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective work, disposal of materials or equipment wrongly supplied and making good any damage to property.

11.5.6 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 11.4.

**CONTRACTOR'S FEE:**

11.6 The Contractor's Fee which shall be allowed to Contractor for his overhead and profit shall be determined as follows:

11.6.1 a mutually acceptable fixed fee; or if none can be agreed upon,

11.6.2 a fee based on the following percentages of the various portions of the Cost of the Work:

11.6.2.1 for costs incurred Under Paragraphs 11.4.1 and 11.4.2, the Contractor's Fee shall be ten percent,

11.6.2.2 for costs incurred under Paragraph 11.4.3, the Contractor's Fee shall be five percent; and if a subcontract is on the basis of Cost of the Work

11.6.2.3 no fee shall be payable on the basis of costs itemized under Paragraphs 11.4.4, 11.4.5 and 11.5.

11.7 NOT USED

11.8 Whenever the cost of any Work is to be determined pursuant to Paragraphs 11.4 and 11.5, Contractor will submit in a form prescribed by Engineer an itemized cost breakdown together with supporting data.

11.9 NOT USED

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

12.1 The Contract Time may only be changed by a Change Order. Any claim for an extension in the Contract Time shall be based on written notice delivered to Owner and Engineer within fifteen (15) days of the occurrence of the event giving rise to the claim. Notice of the extent of the claim with supporting data shall be delivered within forty-five (45) days of such occurrence unless Engineer allows an additional period of time to ascertain more accurate data. All claims for adjustment in the Contract Time shall be determined by Engineer if Owner and Contractor cannot otherwise agree. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order.

12.2 The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of Contractor if he makes a claim therefore as provided in Paragraph 12.1. Such delays shall include, but not be restricted to, acts or neglect by any separate contractor employed by Owner, fires, floods, labor disputes, epidemics, abnormal weather conditions, or acts of God.

12.3 All the time limits stated in the Contract Documents are of the essence for the Agreement. The provisions of this Article 12 shall not exclude recovery for damages (including compensation for additional professional services) for delay by either party.

## **ARTICLE 13 - WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTIONS, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

### **WARRANTY AND GUARANTEE:**

- 13.1 Contractor warrants and guarantees to Owner and Engineer that all work will be of good quality in accordance with the requirements of the Contract Documents.

### **TESTS AND INSPECTIONS:**

- 13.2 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to specifically be inspected, tested, or approved by some public body, Contractor shall assume full responsibility therefore, pay all costs in connection therewith and furnish Engineer the required certificates of inspection, testing or approval. All other inspections, tests and approvals required by the Contract Documents shall be performed by organizations acceptable to Owner and Contractor and the cost thereof shall be borne by Contractor unless otherwise specified.
- 13.3 Contractor shall give Engineer timely notice of readiness of the work for all inspections, tests or approvals. If any such Work required so to be inspected, tested or approved is covered without approval of Engineer, it must, if requested by Engineer, be uncovered for observation, and such uncovering shall be at Contractor's expense unless Contractor has given Engineer timely notice of his intention to cover such Work and Engineer has not acted with reasonable promptness in response to such notice.
- 13.4 Neither observations by Engineer nor inspections, tests or approvals by persons other than Contractor shall relieve Contractor from his obligations to perform the Work in accordance with the requirements of the Contract Documents.
- 13.5 Engineer and his representatives and other representatives of Owner will at reasonable times have access to the Work. Contractor shall provide proper and safe facilities for such access and observation of the Work and also for any inspection or testing thereof by others.

### **UNCOVERING WORK:**

- 13.6 If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for his observation and replaced at Contractor's expense.
- 13.7 If any work has been covered which Engineer has not specifically requested to observe prior to its being covered, or if Engineer considers it necessary or advisable that covered work be inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose or otherwise make available for observation, inspection or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, Contractor shall bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services, and an appropriate deductive Change Order shall be issued. If, however, such Work is not found to be defective, Contractor shall be allowed an increase in the Contract price and/or extension of the Contract Time, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction if he makes a claim therefore as provided in Articles 11 and 12.

### **OWNER MAY STOP THE WORK:**

- 13.8 If the Work is defective, or Contractor fails to supply sufficient skilled workmen or suitable materials or equipment, or if Contractor fails to make prompt payments to Subcontractors or

for labor, materials or equipment, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor or any other party.

**CORRECTION OR REMOVAL OF DEFECTIVE WORK:**

13.9 If required by Engineer prior to approval of final payment, Contractor shall promptly, without cost to Owner and as specified by Engineer, either correct any defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by Engineer, remove it from the site and replace it with acceptable Work. If Contractor does not correct such defective Work or remove and replace such rejected Work within a reasonable time, all as specified in a written notice from Engineer, Owner may have the deficiency corrected or the rejected Work removed and replaced. All direct or indirect costs of such correction or removal and replacement, including compensation for additional professional services, shall be paid by Contractor, and an appropriate deductive Change Order shall be issued. Contractor shall also bear the expenses of making good all Work of others destroyed or damaged by his correction, removal or replacement of his defective Work.

**ONE-YEAR CORRECTION PERIOD:**

13.10 If, after the approval of final payment and prior to the expiration of one year after the date of Substantial completion or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contractor Documents, any Work is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, either correct such defective Work, or, if it has been rejected by Owner, remove it from the site and replace it with acceptable Work. If Contractor does not promptly comply with the terms of such instructions, Owner may have the defective Work corrected or the rejected work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, shall be paid by Contractor.

**ACCEPTANCE OF DEFECTIVE WORK:**

13.11 If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to approval of final payment, also Engineer) prefers to accept it, he may do so. In such case, if acceptance occurs prior to approval of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Price; or, if the acceptance occurs after approval of final payment, an appropriate amount shall be paid by Contractor to Owner.

**NEGLECTED WORK BY CONTRACTOR:**

13.12 If Contractor should fail to prosecute the Work in accordance with the Contract Documents, including any requirements of the progress schedule, Owner, after seven days written notice to Contractor may, without prejudice to any other remedy he may have, make good such deficiencies and the cost thereof (including compensation for additional professional services) shall be charged against Contractor if Engineer approves such action, in which case a Change Order shall be issued incorporating the necessary revisions in the Contract Documents including an appropriate reduction in the Contract Price. If the payments then or thereafter due Contractor are not sufficient to cover such amount, Contractor shall pay the difference to Owner.

**ARTICLE 14--PAYMENTS AND COMPLETION**

**SCHEDULES:**

- 14.1 At least ten (10) days prior to submitting the first Application for a progress payment, Contractor shall submit a progress schedule, a final schedule of Shop Drawings submission and schedule of values of the Work. These schedules shall be satisfactory in form and substance to Engineer. The schedule of values shall include quantities and unit prices aggregating the Contractor Price, and shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Upon approval of the schedules of values by Engineer, it shall be incorporated into the form of Application for Payment furnished by Engineer.

**APPLICATION FOR PROGRESS PAYMENT:**

- 14.2 At least ten (10) days before each progress payment falls due (but not more than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such data and schedules as Engineer may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by such data, satisfactory to Owner, as will establish Owner's title to the material and equipment and protect his interest therein, including applicable insurance. Each subsequent Application for Payment shall include an affidavit of Contractor stating that all previous progress payments received on account of the work have been applied to discharge in full all of Contractor's obligations reflected in prior Applications for Payment. A retainage of 10% (ten percent) shall be withheld from each progress payment to satisfy lien claims unless the contract amount is greater than \$500,000, at which the retainage shall be 5% (five percent).

**CONTRACTOR'S WARRANTY OF TITLE:**

- 14.3 Contractor warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner at the time of payment free and clear of all liens, claims, security interests and encumbrances (hereafter in these General Conditions referred to as "Liens").

**APPROVAL OF PAYMENTS:**

- 14.4 Engineer will, within ten (10) days after receipt of each Application for Payment, either indicate in writing his approval of payment and present the Application to Owner, or return the Application to Contractor indicating in writing his reasons for refusing to approve payment. In the latter case, Contractor may make the necessary corrections and re-submit the Application. Owner shall, within thirty (30) days of presentation to him of an approved Application for Payment, pay Contractor the amount approved by Engineer.
- 14.5 Engineer's approval of any payment requested in an Application for Payment will constitute a representation by him to Owner, based on Engineer's on-site observations of the Work in progress as an experienced and qualified design professional and on his review of the Application for Payment and the accompanying data and schedules that the work has progressed to the point indicated; that, to the best of his knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning Project upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents and any qualifications stated in his approval); and that Contractor is entitled to payment of the amount approved.
- 14.6 Engineer's approval of final payment will constitute an additional representation by him, to Owner that the conditions precedent to Contractor's being entitled to final payment as set forth in Paragraph 14.13 have been fulfilled.

14.7 Engineer may refuse to approve the whole or any part of any payment if, in his opinion, it would be incorrect to make such representations to Owner. He may also refuse to approve any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously approved, to such extent-- as may be necessary in his opinion to protect Owner from loss because:

14.7.1 the Work is defective, or completed Work has been damaged requiring correction or replacement,

14.7.2 claims or Liens have been filed or there is reasonable cause to believe such may be filed,

14.7.3 NOT USED

14.7.4 Owner has been required to correct defective Work or complete the Work in accordance with Paragraph 13.9, or

14.7.5 of unsatisfactory prosecution of the Work, including failure to furnish acceptable submittals or to clean up.

**SUBSTANTIAL COMPLETION:**

14.8 Prior to final payment, Contractor may, in writing to Owner and Engineer, certify that the entire Project is substantially complete and request that Engineer issue a certificate of Substantial Completion. Within a reasonable time thereafter, Owner, Contractor and Engineer shall make an inspection of the Project to determine the status of completion. If Engineer does not consider the Project substantially complete, he will notify Contractor in writing giving his reasons therefore. If Engineer considers the Project substantially complete, he will prepare and deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion and the responsibilities between Owner and Contractor for maintenance and utilities. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment, and the certificate shall fix the time within which such items shall be completed or corrected, said time to be within the Contract Time.

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

14.9 Owner shall have the right to exclude Contractor from the Project after date of Substantial Completion, but Owner shall allow Contractor reasonable access to complete or correct items on the tentative list.

**PARTIAL UTILIZATION:**

14.10 Prior to final payment, Owner may request Contractor in writing to permit him to use a specified part of the Project which he believes he may use without significant interference

with the construction of the other parts of the Project. If Contractor agrees, he will certify to Owner and Engineer that said part of the Project is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Project to determine its status of completion. If Engineer does not consider that it is substantially complete, he will notify Owner and Contractor in writing giving his reasons therefore. If Engineer considers that part of the Project to be substantially complete, he will execute and deliver to Owner and Contractor a certificate to that effect, fixing the date of Substantial Completion as to that part of the Project, attaching thereto a tentative list of items to be completed or corrected before final payment and fixing the responsibility between Owner and Contractor for maintenance, heat and utilities as to that part of the Project. Owner shall have the right to exclude Contractor from any part of the Project which Engineer has so certified to be substantially complete, but Owner shall allow Contractor reasonable access to complete or correct items on the tentative list.

**FINAL INSPECTION:**

14.11 Upon written notice from Contractor that the Project is complete, Engineer will make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars for which this inspection reveals that the work is incomplete or defective. Contractor shall immediately take such measures as are necessary to remedy such deficiencies.

**FINAL APPLICATION FOR PAYMENT:**

14.12 After Contractor has completed all such corrections to the satisfaction of Engineer and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection and other documents--all as required by the Contract Documents, he may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by such data and schedules as Engineer may reasonably require, together with complete and legally effective releases or waivers (satisfactory to Owner) of all Liens arising out of the Contract Documents and the labor and services performed and the material and equipment furnished thereunder. In lieu thereof and as approved by Owner, Contractor may furnish receipts or releases in full; an affidavit of Contractor that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or his property might in any way be responsible, have been paid or otherwise satisfied; and consent of the Surety, if any, to final payment. Contractor may furnish a Bond or other collateral satisfactory to Owner to indemnify him against any Lien.

**APPROVAL OF FINAL PAYMENT:**

14.13 If, on the basis of his observation and review of the Work during construction, his final inspection and his review of the final Application for Payment--all as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor has fulfilled all of his obligations under the Contract Documents, he will, within ten (10) days after receipt of the final Application for Payment, indicate in writing his approval of payment and present the Application to Owner for payment. Thereupon Engineer will give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.16. Otherwise, he will return the Application to Contractor, indicating in writing his reasons for refusing to approve final payment, in which case Contractor shall make the necessary corrections and re-submit the Application. Owner shall, within thirty (30) days of presentation to him of an approved final Application for Payment, pay Contractor the amount approved by Engineer. Monies in retainage shall be requested as above after the lien period.

14.14 If after Substantial Completion of the work, final completion thereof is materially delayed through no fault of Contractor, and Engineer so confirms, Owner shall, upon certification of Engineer, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully complete or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in Paragraph 5.1, the written consent of the Surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Engineer prior to certification of such payments. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

**CONTRACTOR'S CONTINUING OBLIGATION:**

14.15 Contractor's obligation to perform the work and complete the Project in accordance with the Contract Documents shall be absolute. Neither approval of any progress or final payment by Engineer, nor the issuance of a certificate of Substantial Completion, nor any payment by Owner to Contractor under the Contract Documents, nor any use or occupancy of the Project or any failure to do so, nor any correction of defective work by Owner shall constitute an acceptance of Work not in accordance with the Contract documents.

**WAIVER OF CLAIMS:**

14.16 The making and acceptance of final payment shall constitute:

14.16.1 a waiver of all claims by Owner against Contractor other than those arising from unsettled Liens, defective work appearing after final inspection pursuant to Paragraph 14.11, or from failure to comply with the requirements of the Contract Documents or the terms of any special guarantees specified therein, and

14.16.2 a waiver of all claims by Contractor against Owner other than those previously made in writing and still unsettled.

**MAINTENANCE BONDS:**

14.17 NOT USED

14.18 Upon substantial completion of the Construction or Work, the Contractor at the discretion of the Engineer shall file the Engineer's Certificate of Substantial Completion with the Clerk of Courts or Recorder of Mortgages where the Contract Documents were recorded. At the expiration of 45 days, if no claims have been recorded, the Contractor shall obtain and submit to the Engineer a lien privilege certificate along with his final application for payment. Substantial completion shall be generally defined at such time as the Owner may occupy or use the Work for its intended function.

**ARTICLE 15--SUSPENSION OF WORK AND TERMINATION**

**OWNER MAY SUSPEND WORK:**

15.1 Owner may, at any time and without cause, suspend the work or any portion thereof for a period of not more than ninety (90) days by notice in writing to Contractor and Engineer which shall fix the date on which Work shall be resumed. Contractor shall resume the Work on the date so fixed. Contractor will be allowed an increase in the Contract Price or an

extension of the Contract Time, or both, directly attributable to any suspension if he makes a claim therefore as provided in Articles 11 and 12.

**OWNER MAY TERMINATE:**

- 15.2 If Contractor is adjudged as bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for Contractor or for any of his property, or if he files a petition to take advantage of any debtor's act, or to re-organize under the bankruptcy or similar laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to Subcontractors or for labor, or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction, or if he disregards the authority of Engineer, or if he otherwise violates any provision of the Contract Documents, then Owner may, without prejudice to any other right or remedy and after giving Contractor and his Surety seven days, written notice, terminate the services of Contractor and take possession of the Project and finish the Work by whatever method he may deem expedient. In such case Contractor shall not be entitled to receive any further payment until the work is finished.
- 15.3 Where Contractor's services have been so terminated by Owner, said terminations shall not affect any right of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of monies by Owner due Contractor will not release Contractor from liability.
- 15.4 Upon seven (7) days written notice to Contractor and engineer, Owner may, without cause and without prejudice to any other right or remedy, elect to abandon the Project and terminate the Agreement. In such cases, Contractor shall be paid for all Work executed and any expense sustained plus a reasonable profit.
- 15.5 NOT USED

**ARTICLE 16--ARBITRATION**

- 16.1 Arbitration shall not be an acceptable method of settlement for any claim, dispute, discrepancy, deficiency, or other matter associated directly or indirectly with the work, unless specifically agreed to in writing by all parties associated with the Work.

**ARTICLE 17—MISCELLANEOUS**

**GIVING NOTICE:**

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

**COMPUTATION OF TIME:**

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

**GENERAL:**

- 17.3 NOT USED

- 17.4 All Specifications, Drawings, and copies thereof furnished by Engineer shall remain his property. They shall not be used on another Project. With the exception of those sets which have been signed in connection with the execution of the Agreement, all documents shall be returned to him on request upon completion of the Project. The Contract Documents shall not be re-used or copied without the express written consent of the Engineer of record.
- 17.5 The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder, and, in particular but without limitations, the warranties, guarantees and obligations imposed upon Contractor by Paragraphs 6.30, 13.1, 13.10, and 14.3 and the rights and remedies available to Owner thereunder, shall be in addition to, and shall not be construed in any way as a limitation of, any rights and remedies available to them which are otherwise imposed or available by law, by special guarantee or by other provisions of the Contract Documents.
- 17.6 Should Owner or Contractor suffer injury or damage to his person or property because of any error, omission or act of the other or of any of his employees or agents or others for whose acts he is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage.
- 17.7 The Contract Documents shall be governed by the law of the place of the Project.

**PROJECT SIGNS:**

- 17.8 Project signs shall be provided by the Contractor as required in the technical specifications. Any required signs shall be furnished and erected to Engineer's approval prior to any work being performed on the project. No payments shall be made if this requirement is not met. This is not a pay item.

**PROJECT VIDEO:**

- 17.9 The project area shall be videoed by the Contractor before and after the construction of the Work. This shall be copied onto a CD in a widely acceptable, readable format. The tape or copy thereof shall be provided for Owner's records.
- 17.10 NOT USED

***ARTICLE 18--TIME FOR COMPLETION AND LIQUIDATED DAMAGES***

- 18.1 The date of beginning and the time for completion of the work are essential conditions of the Contract Documents and the Work embraced shall be commenced on a date specified in the Notice To Proceed and completed within the time specified in the Contract Documents.
- 18.2 The Contractor will proceed with the work at such rate of progress to insure full completion within the Contract Time. It is expressly understood and agreed, by and between the Contractor and the Owner, that the Contract Time for the completion of the Work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the Work.
- 18.3 If the Contractor shall fail to complete the Work within the Contract Time, or extension of time granted by the Owner, then the Contractor will pay to the Owner the amount for liquidated damages as specified in the Bid for each calendar day that the Contractor shall be in default after the time stipulated in the Contract Documents.

18.4 The Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work is due to the following, and the Contractor has promptly given Written Notice of such delay to the Owner or Engineer.

18.4.1 To any preference, priority or allocation order duly issued by the Owner.

18.4.2 To unforeseeable causes 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, and abnormal and unforeseeable weather.

## **ARTICLE 19--SUPPLEMENTARY CONDITIONS**

### **GENERAL:**

Report to Bonding Company: The Owner reserves the right to submit to the Bonding Agent of the Contractor at any time a report of the Contractor's progress on the project. The Contractor, upon written request, may receive copies of any report sent.

### **DUTIES, RESPONSIBILITIES AND LIMITATIONS OF AUTHORITY OF RESIDENT PROJECT REPRESENTATIVE**

- A. The Resident Project Representative is the Engineer's Agent, and will act as directed by and under the supervision of Engineer and will confer with the Engineer regarding his actions. The Resident Project Representative's dealings in matters pertaining to the on-site Work shall in general be only with the Engineer and the Contractor, and dealings with subcontractors shall only be through or with the full knowledge of the Contractor. Written communications with the Owner will be only through or as directed by the Engineer.
- B. Duties and Responsibilities – Resident Project Representative will:
1. Schedules: Review the progress schedule, schedule of Shop Drawing submissions and schedule of values prepared by Contractor and consult with Engineer concerning their acceptability.
  2. Conferences: Attend pre-construction conferences. Arrange a schedule of progress meetings and other job conferences as required in consultation with Engineer and notify those expected to attend in advance. Attend meetings, and maintain and circulate copies of minutes thereof.
  3. Liaison:
    - a. Serve as the Engineer's liaison with the Contractor, working principally through the Contractor's superintendent and assist him in understanding the intent of the Contract Documents. Assist the Engineer in serving as the Owner's liaison with the Contractor when the Contractor's operations affect the Owner's on-site operations.
    - b. As requested by the Engineer, assist in obtaining from the Owner additional details or information, when required at the job site for proper execution of the Work.
  4. Shop Drawings and Samples
    - a. Receive and record date of receipt of Shop Drawings and samples, receive samples which are furnished at the site by Contractor, and notify Engineer of their availability for examination.

- b. Advise Engineer and Contractor or his superintendent immediately of the commencement of any Work requiring a Shop Drawing or sample submission if the submission has not been approved by Engineer.
5. Review of Work, Rejection of Defective Work, Inspections and Tests
  - a. Conduct on-site observations of the work in progress to assist Engineer in determining if the Work is proceeding in accordance with the Contract Documents and that completed Work will conform to the Contract Documents.
  - b. Report to Engineer whenever he believes that any Work is unsatisfactory, faulty or defective or does not conform to the Contract Documents, or does not meet the requirements of any inspections, tests or approvals required to be made, or has been damaged prior to final payment; and advise Engineer when he believes Work should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
  - c. Verify that tests, equipment and systems startups and operating and maintenance instructions are conducted as required by the Contract Documents and in presence of the required personnel, and that Contractor maintains adequate records thereof; observe, record and report to Engineer appropriate details relative to the test procedures and startups.
  - d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the outcome of these inspections and report to Engineer.
6. Interpretation of Contract Documents: Transmit to Contractor the Engineer's clarifications and interpretations of the Contract Documents.
7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report them with recommendations to Engineer.
8. Records
  - a. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and samples submissions, reproductions of original Contract Documents including all addenda, change orders, field orders, additional Drawings issued subsequent to the execution of the Contract, Engineer's clarifications and interpretations of the Contract Documents, progress, reports, and other Project related documents.
  - b. Keep a diary or log book, recording hours on the job site, weather conditions, data relative to questions of extras or deductions, list of visiting officials and representatives of manufacturers, fabricators, suppliers and distributors, daily activities, decisions, observations in general and specific observations in more detail as in the case of observing test procedures. Send copies to Engineer.
  - c. Record names, addresses and telephone numbers of all Contractors, sub-contractors and major suppliers of materials and equipment.
9. Reports
  - a. Furnish Engineer periodic reports as required of progress of the Work and Contractor's compliance with the approved progress schedule of Shop Drawing submissions.
  - b. Consult with Engineer in advance of scheduled major tests, inspections or start of important phases of the work.
  - c. Report immediately to Engineer upon the occurrence of any accident.
10. Payment Requisitions: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward them with recommendations to

Engineer, noting particularly their relation to the schedule of values, Work completed and materials and equipment delivered at the site but not incorporated in the Work.

11. Certificates, Maintenance and operation Manuals: During the course of the Work verify that certificates, maintenance and operation manuals, and other data required to be assembled and furnished by Contractor are applicable to the items actually installed; and deliver this material to Engineer for his review and forwarding to Owner prior to final acceptance of the Work.

#### 12. Completion

- a. Conduct final inspection in the company of Engineer, Owner and Contractor and prepare a final list of items to be completed or corrected.
- b. Before Engineer issues a Certificate of Completion, submit to Contractor a list of observed items requiring completion or correction.
- c. Verify that all items on final list have been completed or corrected and make recommendations to Engineer concerning acceptance.

#### 13. Limitations of Authority

Except upon written instructions of Engineer, Resident Project Representative:

- a. Shall not authorize any deviation from the Contract Documents or approve any substitute materials or equipment.
- b. Shall not exceed limitations on Engineer's authority as set forth in the contract Documents.
- c. Shall not undertake any of the responsibilities of Contractor, subcontractors or Contractor's superintendent, or expedite the Work.
- d. Shall not advise or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the Contract Documents.
- e. Shall not advise or issue directions as to safety precautions and programs in connection with the Work.
- f. Shall not authorize Owner to occupy the Project in whole or in part.
- g. Shall not participate in specialized field or laboratory tests.

# ***DIVISION 1***

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## **GENERAL REQUIREMENTS**

DAMMON ENGINEERING, INC.  
554 OLD SPANISH TRAIL  
SLIDELL, LOUISIANA 70458  
Phone: 985-649-5832  
Fax: 985-641-5950  
Dammonengineering.com





## SECTION 01100

### SUMMARY

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes the following:

- 1. Work covered by the Contract Documents.
- 2. Type of the Contract.
- 3. Owner-furnished products
- 4. Use of premises.
- 5. Owner's occupancy requirements.
- 6. Work restrictions.
- 7. Specification formats and conventions.
- 8. Miscellaneous provisions.

- B. Related Sections include the following:

- 1. Division 1 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

##### 1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: City of Slidell – City Hall Parking Lot and Courtyard

- 1. Project Location: Slidell, Louisiana

- B. Owner: City of Slidell

- 1. Owner's Representative: Donna O'Dell

- C. Architect: Dammon Engineering, Inc.

- D. Contractor: \_\_\_\_\_ has been engaged as Contractor for this Project.

- E. The Work consists of the following:

1. The Work includes new City Hall Parking Lot and Courtyard on Bouscaren Street in Slidell, Louisiana.

#### 1.4 TYPE OF CONTRACT

- A. Project will be constructed under a single prime contract.

#### 1.5 OWNER-FURNISHED PRODUCTS

1. Contractor will furnish products indicated on the plans.
2. Contractor is responsible for receiving, unloading, and handling all items at Project site.

#### 1.6 USE OF PREMISES

- A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
  1. Owner Occupancy: Allow for Owner occupancy of Project site and use by the public.
  2. Driveways and Entrances: Keep driveways loading areas, and entrances serving premises clear and available to Owner, the public and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
    - a. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

#### 1.7 OWNER'S OCCUPANCY REQUIREMENTS

- A. Full Owner Occupancy: Owner will occupy site during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations.
  1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.

#### 1.8 WORK RESTRICTIONS

- A. On-Site Work Hours: Work shall be performed during normal business working hours, early morning hours, and weekend hours, all by pre-arrangement only.

- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Architect and Owner not less than five days in advance of proposed utility interruptions.

## 1.9 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC's "MasterFormat" numbering system.
  - 1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
  - 2. Division 1: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.
- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
  - 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
    - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF DOCUMENT



## SECTION 01250

### CONTRACT MODIFICATION PROCEDURES

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

##### 1.3 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

##### 1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
  - 2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include costs of labor and supervision directly attributable to the change.
    - d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity

duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

- B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Architect.
  - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
  - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
  - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
  - 4. Include costs of labor and supervision directly attributable to the change.
  - 5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
  - 6. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.
- C. Proposal Request Form: Use AIA Document G709 for Proposal Requests.

#### 1.5 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

#### 1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
  - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
  - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF DOCUMENT



## SECTION 01251

### SUBSTITUTION PROCEDURES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.

##### 1.2 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

##### 1.3 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use **CSI Form 13.1A**.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
  - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
  - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
  - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
  - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
  - e. Samples, where applicable or requested.
  - f. Certificates and qualification data, where applicable or requested.
  - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
  - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
  - i. Research reports evidencing compliance with building code in effect for Project.

- j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
  - k. Cost information, including a proposal of change, if any, in the Contract Sum.
  - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
  - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within **seven** days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within **15** days of receipt of request, or **seven** days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
  - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

#### 1.4 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

### PART 2 - PRODUCTS

#### 2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than **15** days prior to time required for preparation and review of related submittals.
  - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:
    - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    - b. Requested substitution will not adversely affect Contractor's construction schedule.
    - c. Requested substitution has received necessary approvals of authorities having jurisdiction.

- d. Requested substitution is compatible with other portions of the Work.
  - e. Requested substitution has been coordinated with other portions of the Work.
  - f. Requested substitution provides specified warranty.
  - g. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received within **10** days after **the Notice to Proceed**.
- 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:
    - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
    - b. Requested substitution does not require extensive revisions to the Contract Documents.
    - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    - d. Requested substitution will not adversely affect Contractor's construction schedule.
    - e. Requested substitution has received necessary approvals of authorities having jurisdiction.
    - f. Requested substitution is compatible with other portions of the Work.
    - g. Requested substitution has been coordinated with other portions of the Work.
    - h. Requested substitution provides specified warranty.
    - i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01251





# SUBSTITUTION REQUEST

(After the Bidding/Negotiating Stage)

Project: \_\_\_\_\_ Substitution Request Number: \_\_\_\_\_  
 \_\_\_\_\_  
 From: \_\_\_\_\_  
 To: \_\_\_\_\_ Date: \_\_\_\_\_  
 \_\_\_\_\_  
 A/E Project Number: \_\_\_\_\_  
 Re: \_\_\_\_\_ Contract For: \_\_\_\_\_

Specification Title: \_\_\_\_\_ Description: \_\_\_\_\_  
 Section: \_\_\_\_\_ Page: \_\_\_\_\_ Article/Paragraph: \_\_\_\_\_

Proposed Substitution: \_\_\_\_\_  
 Manufacturer: \_\_\_\_\_ Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Trade Name: \_\_\_\_\_ Model No.: \_\_\_\_\_  
 Installer: \_\_\_\_\_ Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
 History:  New product  1-4 years old  5-10 years old  More than 10 years old  
 Differences between proposed substitution and specified product: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Point by point comparative data attached — REQUIRED BY A/E

Reason for not providing specified item: \_\_\_\_\_  
 \_\_\_\_\_

Similar Installation:

Project: \_\_\_\_\_ Architect: \_\_\_\_\_  
 Address: \_\_\_\_\_ Owner: \_\_\_\_\_  
 \_\_\_\_\_ Date Installed: \_\_\_\_\_

Proposed substitution affects other parts of Work:  No  Yes: explain \_\_\_\_\_  
 \_\_\_\_\_

Savings to Owner for accepting substitution: \_\_\_\_\_ (\$ \_\_\_\_\_).

Proposed substitution changes Contract Time:  No  Yes [Add] [Deduct] \_\_\_\_\_ days.

Supporting Data Attached:  Drawings  Product Data  Samples  Tests  Reports  \_\_\_\_\_



## SECTION 01290

### PAYMENT PROCEDURES

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Sections include the following:
  - 1. Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
  - 2. Division 1 Section "Unit Prices" for administrative requirements governing use of unit prices.

##### 1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

##### 1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
  - 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
    - a. Application for Payment forms with Continuation Sheets.
    - b. Submittals Schedule.
    - c. Contractor's Construction Schedule.
  - 2. Submit the Schedule of Values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

3. Subschedules: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project identification on the Schedule of Values:
    - a. Project name and location.
    - b. Name of Architect.
    - c. Architect's project number.
    - d. Contractor's name and address.
    - e. Date of submittal.
  2. Submit draft of AIA Document G703 Continuation Sheets.
  3. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
    - a. Related Specification Section or Division.
    - b. Description of the Work.
    - c. Name of subcontractor.
    - d. Name of manufacturer or fabricator.
    - e. Name of supplier.
    - f. Change Orders (numbers) that affect value.
    - g. Dollar value.
      - 1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
  4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
  5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
  6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
    - a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
  7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
  - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

#### 1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
  1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.
- D. Payment Application Forms: Use forms provided by Owner for Applications for Payment. Sample copies are included at end of this Section.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
  1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
  2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- F. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
  1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
  2. When an application shows completion of an item, submit final or full waivers.
  3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
  4. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
  5. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
  2. Schedule of Values.
  3. Contractor's Construction Schedule (preliminary if not final).
  4. Products list.
  5. Schedule of unit prices.
  6. Submittals Schedule (preliminary if not final).
  7. List of Contractor's staff assignments.
  8. List of Contractor's principal consultants.
  9. Copies of building permits.
  10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
  11. Initial progress report.
  12. Report of preconstruction conference.
  13. Certificates of insurance and insurance policies.
  14. Performance and payment bonds.
  15. Data needed to acquire Owner's insurance.
  16. Initial settlement survey and damage report if required.
- I. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
  2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF DOCUMENT



## SECTION 01310

### PROJECT MANAGEMENT AND COORDINATION

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. Coordination Drawings.
  - 2. Administrative and supervisory personnel.
  - 3. Project meetings.
  - 4. Requests for Interpretation (RFIs).
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.
- C. Related Sections include the following:
  - 1. Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
  - 2. Division 1 Section "Closeout Procedures" for coordinating closeout of the Contract.

##### 1.3 DEFINITIONS

- A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

##### 1.4 COORDINATION

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

- B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
  3. Make adequate provisions to accommodate items scheduled for later installation.
  4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
- C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's Construction Schedule.
  2. Preparation of the Schedule of Values.
  3. Installation and removal of temporary facilities and controls.
  4. Delivery and processing of submittals.
  5. Progress meetings.
  6. Preinstallation conferences.
  7. Project closeout activities.
  8. Startup and adjustment of systems.
  9. Project closeout activities.
- E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

## 1.5 SUBMITTALS

- A. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

## 1.6 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.
  - 1. Include special personnel required for coordination of operations with other contractors.

## 1.7 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
  - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
  - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
  - 3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
- B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 5 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
  - 1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 2. Agenda: Discuss items of significance that could affect progress, including the following:
    - a. Tentative construction schedule.
    - b. Phasing.
    - c. Critical work sequencing and long-lead items.

- d. Designation of key personnel and their duties.
  - e. Procedures for processing field decisions and Change Orders.
  - f. Procedures for RFIs.
  - g. Procedures for inspecting.
  - h. Procedures for processing Applications for Payment.
  - i. Distribution of the Contract Documents.
  - j. Submittal procedures.
  - k. Use of the sites.
  - l. Work restrictions.
  - m. Owner's occupancy requirements.
  - n. Responsibility for temporary facilities and controls.
  - o. Construction waste management and recycling.
  - p. Parking availability.
  - q. Office, work, and storage areas.
  - r. Equipment deliveries and priorities.
  - s. First aid.
  - t. Security.
  - u. Progress cleaning.
  - v. Working hours.
3. Minutes: Record and distribute meeting minutes.
- C. Progress Meetings: Conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payment requests.
1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      - 1) Review schedule for next period.
    - b. Review present and future needs of each entity present, including the following:
      - 1) Interface requirements.
      - 2) Sequence of operations.

- 3) Status of submittals.
  - 4) Deliveries.
  - 5) Off-site fabrication.
  - 6) Access.
  - 7) Site utilization.
  - 8) Temporary facilities and controls.
  - 9) Work hours.
  - 10) Hazards and risks.
  - 11) Progress cleaning.
  - 12) Quality and work standards.
  - 13) Status of correction of deficient items.
  - 14) Field observations.
  - 15) RFIs.
  - 16) Status of proposal requests.
  - 17) Pending changes.
  - 18) Status of Change Orders.
  - 19) Pending claims and disputes.
  - 20) Documentation of information for payment requests.
3. Minutes: **Record** the meeting minutes.
  4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
    - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

#### 1.8 REQUESTS FOR INTERPRETATION (RFI's)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.

5. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
6. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:

7. Project name.
8. Date.
9. Name of Contractor.
10. Name of Architect.
11. RFI number, numbered sequentially.
12. Specification Section number and title and related paragraphs, as appropriate.
13. Drawing number and detail references, as appropriate.

14. Field dimensions and conditions, as appropriate.
  15. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  16. Contractor's signature.
  17. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
    - a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.
- D. Hard-Copy RFIs: AIA G716 – 2004, Request for Information (RFI).
1. Identify each page of attachments with the RFI number and sequential page number.
- E. Software-Generated RFIs: Software-generated form with substantially the same content as indicated above.
1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- F. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow **Ten** working days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs will be returned without action:
    - a. Requests for approval of submittals.
    - b. Requests for approval of substitutions.
    - c. Requests for coordination information already indicated in the Contract Documents.
    - d. Requests for adjustments in the Contract Time or the Contract Sum.
    - e. Requests for interpretation of Architect's actions on submittals.
    - f. Incomplete RFIs or RFIs with numerous errors.
  2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
  3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 1 Section "Contract Modification Procedures."
    - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within **10** days of receipt of the RFI response.
- G. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

- H. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log with not less than the following:
1. Project name.
  2. Name and address of Contractor.
  3. Name and address of Architect.
  4. RFI number including RFIs that were dropped and not submitted.
  5. RFI description.
  6. Date the RFI was submitted.
  7. Date Architect's response was received.
  8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
  9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01310



## SECTION 01330

### SUBMITTALS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Sections include the following:
  - 1. Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
  - 2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
  - 3. Division 1 Section "Closeout Procedures" for submitting warranties.
  - 4. Division 1 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
  - 5. Divisions 2 through 16 Sections for specific requirements for submittals in those Sections.

##### 1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Architect's responsive action.
- B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

##### 1.4 SUBMITTAL PROCEDURES

- A. General: Electronic copies of CAD Drawings of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.
- D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
  2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  3. Resubmittal Review: Allow 15 days for review of each resubmittal.
  4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
  5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
- E. Identification: Place a permanent label or title block on each submittal for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
  2. Provide a space approximately **6 by 8 inches** on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
  3. Include the following information on label for processing and recording action taken:
    - a. Project name.
    - b. Date.
    - c. Name and address of Architect.
    - d. Name and address of Contractor.
    - e. Name and address of subcontractor.
    - f. Name and address of supplier.
    - g. Name of manufacturer.

- h. Submittal number or other unique identifier, including revision identifier.
    - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).
  - i. Number and title of appropriate Specification Section.
  - j. Drawing number and detail references, as appropriate.
  - k. Location(s) where product is to be installed, as appropriate.
  - l. Other necessary identification.
- F. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
- G. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
- 1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.
  - 2. Additional copies submitted for maintenance manuals will be marked with action taken and will be returned.
- H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, received from sources other than Contractor.
- 1. Transmittal Form: Use AIA Document G810.
  - 2. Transmittal Form: Provide locations on form for the following information:
    - a. Project name.
    - b. Date.
    - c. Destination (To:).
    - d. Source (From:).
    - e. Names of subcontractor, manufacturer, and supplier.
    - f. Category and type of submittal.
    - g. Submittal purpose and description.
    - h. Specification Section number and title.
    - i. Drawing number and detail references, as appropriate.
    - j. Transmittal number.
    - k. Submittal and transmittal distribution record.
    - l. Remarks.
    - m. Signature of transmitter.
  - 3. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the

Contract Documents, including minor variations and limitations. Include same label information as related submittal.

- I. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
  - 1. Note date and content of previous submittal.
  - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
- J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

#### 1.5 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

- A. General: At Contractor's written request, copies of Architect's CAD files will be provided to Contractor for Contractor's use in connection with Project.

### PART 2 - PRODUCTS

#### 2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
  - 1. Submit electronic submittals directly to extranet specifically established for Project.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
  - 2. Mark each copy of each submittal to show which products and options are applicable.
  - 3. Include the following information, as applicable:
    - a. Manufacturer's written recommendations.
    - b. Manufacturer's product specifications.
    - c. Manufacturer's installation instructions.
    - d. Standard color charts.
    - e. Manufacturer's catalog cuts.
    - f. Compliance with specified referenced standards.
    - g. Testing by recognized testing agency.
    - h. Application of testing agency labels and seals.
    - i. Notation of coordination requirements.

4. Submit Product Data before or concurrent with Samples.
  5. Number of Copies: Submit five copies of Product Data, unless otherwise indicated. Architect will return three copies. Mark up and retain one returned copy as a Project Record Document.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Dimensions.
    - b. Identification of products.
    - c. Fabrication and installation drawings.
    - d. Roughing-in and setting diagrams.
    - e. Shopwork manufacturing instructions.
    - f. Templates and patterns.
    - g. Schedules.
    - h. Design calculations.
    - i. Compliance with specified standards.
    - j. Notation of coordination requirements.
    - k. Notation of dimensions established by field measurement.
    - l. Relationship to adjoining construction clearly indicated.
    - m. Seal and signature of professional engineer if specified.
  2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least **8-1/2 by 11 inches** but no larger than **30 by 40 inches**.
  3. Number of Copies: Submit five opaque copies of each submittal, unless copies are required for operation and maintenance manuals. Submit additional copies where copies are required for operation and maintenance manuals. Architect will retain two copies; remainder will be returned. Mark up and retain one returned copy as a Project Record Drawing.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of appropriate Specification Section.
  3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity.

Sample sets may be used to determine final acceptance of construction associated with each set.

- a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
  - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
- a. Number of Samples: Submit two full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
- a. Number of Samples: Submit three sets of Samples. Architect will retain two] Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
    - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
    - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation" for Construction Manager's action.
- F. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."
- G. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."
- H. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."

- I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
  1. Name, address, and telephone number of entity performing subcontract or supplying products.
  2. Number and title of related Specification Section(s) covered by subcontract.
  3. Drawing number and detail references, as appropriate, covered by subcontract.
  4. Number of Copies: Submit three copies of subcontractor list, unless otherwise indicated. Architect will return two copies.
    - a. Mark up and retain one returned copy as a Project Record Document.

## 2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
  1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Architect will not return copies.
  2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
  3. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."
- B. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."
- C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- E. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- F. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- G. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

- H. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."
- I. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- J. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- K. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- L. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- M. Construction Photographs or Videotapes: Comply with requirements specified in Division 1 Section " Photographic Documentation."
- N. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Architect.
  - 1. Architect will not review submittals that include MSDSs and will return the entire submittal for resubmittal.

## PART 3 - EXECUTION

### 3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S/ ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF DOCUMENT 01330



## SECTION 01500

### TEMPORARY FACILITIES AND CONTROLS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Sections include the following:
  - 1. Division 1 Section "Summary" for limitations on utility interruptions and other work restrictions.
  - 2. Division 1 Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
  - 3. Division 1 Section "Execution Requirements" for progress cleaning requirements.

#### PART 2 - PRODUCTS

##### 2.1 MATERIALS

- A. Pavement: Comply with Division 2 Section "Cement Concrete Pavement."
- B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
  - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
  - 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- C. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
  - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
  - 2. Remove snow and ice as required to minimize accumulations.

2.2 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
  - 1. Comply with work restrictions specified in Division 1 Section "Summary."
- B. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- C. Tree and Plant Protection: Comply with requirements specified in Division 2 Section "Tree Protection and Trimming."
- D. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

END OF DOCUMENT

## SECTION 01700

### EXECUTION REQUIREMENTS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Field engineering and surveying.
  - 3. General installation of products.
  - 4. Coordination of Owner-installed products.
  - 5. Progress cleaning.
  - 6. Protection of installed construction.
  - 7. Correction of the Work.
- B. Related Sections include the following:
  - 1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
  - 2. Division 1 Section "Closeout Procedures," recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

#### PART 2 - PRODUCTS (Not Used)

#### PART 3 - EXECUTION

##### 3.1 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
  - 1. Before construction, verify the location and points of connection of utility services.

- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  - 1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
    - a. Description of the Work.
    - b. List of detrimental conditions, including substrates.
    - c. List of unacceptable installation tolerances.
    - d. Recommended corrections.
  - 2. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit requests on AIA Form G716, "Request for Information."

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General:

1. Establish benchmarks and control points to set lines and levels of construction and elsewhere as needed to locate each element of Project.
2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
3. Inform installers of lines and levels to which they must comply.
4. Check the location, level and plumb, of every major element as the Work progresses.
5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.

- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

### 3.4 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points.

- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

- C. Benchmarks:

1. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
2. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

### 3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.

- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

- C. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- D. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- E. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. .
- F. Hazardous Materials: Use products, and installation materials that are not considered hazardous.

### 3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. . Enforce requirements strictly. Dispose of materials lawfully.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

### 3.7 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration until accepted.

### 3.8 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
  - 1. Repairing includes refinishing damaged surfaces, touching up with matching materials.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

END OF DOCUMENT 01700

## SECTION 01732

### SELECTIVE DEMOLITION

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Demolition and removal of selected site elements.
  - 2. Salvage of existing items to be reused or recycled.
- B. Related Sections include the following:
  - 1. Division 1 Section "Summary" for use of premises and Owner-occupancy requirements.
  - 2. Division 1 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
  - 3. Division 2 Section "Site Clearing" for site clearing and removal of above- and below-grade improvements.

##### 1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

1.5 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

1.6 PROJECT CONDITIONS

- A. Owner will occupy portions of project immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
  - 1. Comply with requirements specified in Division 1 Section "Summary."
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems: Maintain services/systems to remain and protect them against damage during selective demolition operations.
  - 1. Comply with requirements for existing services/systems interruptions specified in Division 1 Section "Summary."
- B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
  - 1. Arrange to shut off utilities with utility companies if required.

3.2 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  - 1. Comply with requirements for access and protection specified in Division 1 Section "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
  - 1. Strengthen or add new supports when required during progress of selective demolition.

### 3.3 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  - 1. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  - 2. Dispose of demolished items and materials promptly.
- B. Removed and Salvaged Items:
  - 1. Store items in a secure area until delivery to Owner.
- C. Removed and Reinstalled Items:
  - 1. Reinstall items as required. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

### 3.4 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.
- B. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

### 3.5 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
  - 1. Do not allow demolished materials to accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  - 3. Comply with requirements specified in Division 1 Section "Construction Waste Management."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.6 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF DOCUMENT



## SECTION 01770

### CLOSEOUT PROCEDURES

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Inspection procedures.
  - 2. Warranties.
  - 3. Final cleaning.
- B. Related Sections include the following:
  - 1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
  - 2. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
  - 3. Divisions 2 through 16 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

##### 1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection, complete the following. List items below that are incomplete in request.
  - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

#### 1.4 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
  1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
  2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
  1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

#### 1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three copies of list. Include name and identification of each area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
  1. Include the following information:
    - a. Project name.
    - b. Date.
    - c. Name of Architect.
    - d. Name of Contractor.

#### 1.6 WARRANTIES

- A. Provide a written one year warranty covering materials and workmanship.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning:
  - 1. Complete the following cleaning operations before requesting inspection for entire Project or for a portion of Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. Leave Project clean and ready for use.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF DOCUMENT



# ***DIVISION 2***

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## **SITE CONSTRUCTION**

DAMMON ENGINEERING, INC.  
554 OLD SPANISH TRAIL  
SLIDELL, LOUISIANA 70458  
Phone: 985-649-5832  
Fax: 985-641-5950  
Dammonengineering.com





## SECTION 02300

### EARTHWORK

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Preparing subgrades for slabs-on-grade, walks and pavements.
- B. Related Sections include the following:
  - 1. Division 1 Section "Temporary Facilities and Controls" for temporary controls, utilities, and support facilities.

##### 1.3 UNIT PRICES – NOT USED

##### 1.4 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.
  - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Owner's written permission.
  - 3. Contact utility-locator service for area where Project is located before excavating.
- B. Coordinate with utility companies to shut off services if lines are active.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARATION

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

3.2 EXCAVATION FOR WALKS AND PAVEMENTS

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

3.3 SUBGRADE INSPECTION

- A. Notify Architect when excavations have reached required subgrade.
- B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

3.4 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of trees.

3.5 GRADING

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

2. Walks: Plus or minus 1 inch.
3. Pavements: Plus or minus 1/2 inch.

### 3.6 PROTECTION

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

### 3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.
- B. Disposal: Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.
  1. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF DOCUMENT



## SECTION 02311

### SITE CLEARING

**SEE GEOTECHNICAL REPORT INCLUDED AT THE END OF THE SPECIFICATION MANUAL. INSTRUCTION(S) AND/OR RECOMMENDATION(S) NOTED IN GEOTECHNICAL REPORT SHALL SUPERSEDE ANY CONFLICTING DIRECTIVES WITHIN THIS SPECIFICATION SECTION.**

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.
6. Disconnecting, capping or sealing site utilities.
7. Temporary erosion- and sedimentation-control measures.

##### 1.2 MATERIAL OWNERSHIP

- A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

##### 1.3 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
  2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
- C. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.

D. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

A. Satisfactory Soil Material: As Indicated in Geotechnical Report and on Project Plans.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Locate and clearly identify trees, shrubs, and other vegetation to remain or to be relocated.
- C. Protect existing site improvements to remain from damage during construction.
  1. Restore damaged improvements to their original condition, as acceptable to Owner.

### 3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to authorities having jurisdiction.
- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

- A. General: Protect trees and plants remaining on-site according to requirements.
- B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.

3.4 EXISTING UTILITIES

- A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.
  - 1. Arrange with utility companies to shut off indicated utilities.
- B. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Architect not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Architect's written permission.

3.5 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
  - 1. Grind down stumps and remove roots, obstructions, and debris to a depth of **18 inches (450 mm)** below exposed subgrade.
  - 2. Use only hand methods for grubbing within protection zones.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
  - 1. Place fill material in horizontal layers not exceeding a loose depth of **8 inches (200 mm)**, and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil as indicated in applicable sections of Geotechnical Report
- C. Stockpile topsoil away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

3.7 SITE IMPROVEMENTS

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

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
- B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION 02311

## SECTION 2312

### EARTH MOVING

**SEE GEOTECHNICAL REPORT INCLUDED AT THE END OF THE SPECIFICATION MANUAL. INSTRUCTION(S) AND/OR RECOMMENDATION(S) NOTED IN GEOTECHNICAL REPORT SHALL SUPERSEDE ANY CONFLICTING DIRECTIVES WITHIN THIS SPECIFICATION SECTION.**

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Preparing subgrades for walks, pavements, turf and grasses and plants.
2. Excavating and backfilling for buildings and structures.
3. Drainage course for concrete slabs-on-grade.
4. Subbase course for concrete walks and pavements.
5. Subbase course and base course for asphalt paving.
6. Excavating and backfilling for utility trenches.

##### 1.2 DEFINITIONS

###### A. Backfill: Soil material used to fill an excavation.

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

###### B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

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

###### D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

###### E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

###### F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation

and replacement material will be paid for according to Contract provisions for changes in the Work.

2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

I. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

J. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

K. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

### 1.3 QUALITY ASSURANCE

A. Preexcavation Conference: Conduct conference at Project site.

### 1.4 PROJECT CONDITIONS

A. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth moving operations.

B. Do not commence earth moving operations until plant-protection measures are in place.

## PART 2 - PRODUCTS

### 2.1 SOIL MATERIALS – SEE GEOTECHNICAL REPORT AND PROJECT PLANS

### 2.2 ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, **6 inches (150 mm)** wide and **4 mils (0.1 mm)** thick, continuously inscribed with a description of the utility; colored to comply with local practice or requirements of authorities having jurisdiction.

- B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of **6 inches (150 mm)** wide and **4 mils (0.1 mm)** thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to **30 inches (750 mm)** deep; colored to comply with local practice or requirements of authorities having jurisdiction.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

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

#### 3.2 EXCAVATION, GENERAL - **SEE GEOTECHNICAL REPORT AND PROJECT PLANS**

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

#### 3.3 EXCAVATION FOR WALKS AND PAVEMENTS- **SEE GEOTECHNICAL REPORT AND PROJECT PLANS**

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

#### 3.4 SUBGRADE INSPECTION- **SEE GEOTECHNICAL REPORT AND PROJECT PLANS**

- A. Proof-roll subgrade below the slabs and pavements with a pneumatic-tired dump truck to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
- B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.5 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi (17.2 MPa), may be used when approved by Architect.
  - 1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

3.6 STORAGE OF SOIL MATERIALS

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

3.7 SOIL FILL- **SEE GEOTECHNICAL REPORT AND PROJECT PLANS**

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
  - 1. Under grass and planted areas, use satisfactory soil material.
  - 2. Under walks and pavements, use satisfactory soil material.
  - 3. Under steps and ramps, use engineered fill.

3.8 SOIL MOISTURE CONTROL- **SEE GEOTECHNICAL REPORT AND PROJECT PLANS**

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

- 3.9      **COMPACTION OF SOIL BACKFILLS AND FILLS- SEE GEOTECHNICAL REPORT AND PROJECT PLANS**
- 3.10     **GRADING- SEE GEOTECHNICAL REPORT AND PROJECT PLANS**
- A.     General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
- 3.11     **SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS - SEE GEOTECHNICAL REPORT AND PROJECT PLANS**
- 3.12     **FIELD QUALITY CONTROL- SEE GEOTECHNICAL REPORT AND PROJECT PLANS**
- A.     Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- B.     Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- C.     When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.
- 3.13     **PROTECTION- SEE GEOTECHNICAL REPORT AND PROJECT PLANS**
- A.     Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B.     Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
- C.     Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
1.     Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.
- 3.14     **DISPOSAL OF SURPLUS AND WASTE MATERIALS**
- A.     Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

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END OF SECTION 02312

## SECTION 02810

### LANDSCAPE IRRIGATION

#### 1.0 GENERAL

##### 1.1 DESCRIPTION OF WORK:

A. Furnish all labor, materials, equipment, and services necessary for the complete installation of a landscape irrigation system to provide 100% coverage of the landscape areas identified on the plans as specified. The work includes but is not limited to:

1. Trenching, backfill and compaction for irrigation lines.
2. Automatically controlled irrigation system: Backflow prevention; water tap; water meter; pressure regulator; drain valves and isolation gate valves; piping and sleeves under paving and sidewalks, repair of paving, main and later lines; electrical valves and wiring, valve boxes and controllers; sprinklers, couplings, connectors and fittings.
3. Test all systems and make operative.
4. Submit record drawings.
5. One-year guarantee period.

##### 1.2 QUALITY CONTROL:

A. Installer Qualifications: Firms experienced in the successful installation of a minimum of five projects within the past five years similar in scope, quality, and contract value to that indicated for this project. Firm shall have sufficient manpower, equipment and financial resources to complete the Work of the Section .

B. The Owner and the Landscape Architect reserve the right to reject any and all materials and workmanship which they deem to be not in accordance with the specifications. Rejected materials and work shall be removed from the site immediately and replaced with that of the specified quality.

##### C. Applicable Standards:

ASTM

D2241-Poly (Vinyl Chloride) (PVC) Plastic Pipe, SDR/PR, Class 200 and 160.

D1785- Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedule 40.

D2464- Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Threaded, Schedule 40.

D2466- Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Socket Type, Schedule 40

D2564-Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings.

##### D. Applicable Codes:

1. Most current edition of Uniform Plumbing Code.
2. Applicable Building Code.
3. All applicable local codes and ordinances.

4. National Electric Code.
5. Should specification's requirements differ from local requirements, consider Contract Documents requirements to be minimum acceptable and comply with any more stringent local requirements.

E. Permits and Fees:

1. Obtain all permits and pay required fees to any agency having jurisdiction over the work.
2. Arrange inspections required by local ordinances during the course of the construction.
3. Upon completion of the work, furnish satisfactory evidence to show that all work has been installed in accordance with the ordinances and code requirements.

F. Testing:

1. Perform testing and inspections required by specifications and by regulating authorities.
2. Give 24 hours notice that such tests are to be conducted.

1.3 SUBMITTALS:

A. Product Data: Include pressure rating, rated capacity, settings, and electrical data of selected models for the following:

1. Valves. Include above ground and below ground; general duty, manual and automatic control, and quick-coupler types.
2. Valve boxes.
3. Sprinklers.
4. Specialties. Include emitters, drip tube, and other devices.
5. Controllers. Include wiring diagrams.

B. Record Drawings:

1. Prepare and submit a reproducible Record Drawing showing the complete layout of the main line pipe, controller location, valve locations, and all sprinkler head locations. Record Drawings shall also include and show all materials, and manufacturer's name and catalog number.

1.4 SITE INSPECTION:

A. Become familiar with all site conditions.

B. Locate all existing utilities prior to start of construction.

C. Make necessary adjustments in the layout as may be required, 1) to connect to existing stubouts (should such stubs not be located exactly as shown) or 2) to work around existing work. Such adjustments shall be made with no increase in cost to owner.

## 1.5 PROTECTION OF EXISTING CONDITIONS:

- A. Take necessary precautions to protect site conditions to remain.
- B. Should damage be incurred, repair the work to its original condition at no additional cost to the Owner.

## 2.0 PRODUCTS

- A. Available Manufacturers and Products may be referenced or demonstrated throughout this specification. Upon approval, products of equal or better quality by any manufacturer may be used in lieu of any described herein.

## 2.1 PIPE AND FITTINGS:

- A. Pipe sizes shall conform to those shown on the drawings. No substitutions of smaller pipe sizes will be permitted, but substitutions of larger size may be approved. All pipe damaged or rejected because of defects shall be removed from the site at the time of said rejection.
- B. All piping 3 inch and larger will be equipped with gaskets.
- C. All fittings for pipes 3 inches or larger will be equipped with gaskets.
- D. All piping downstream of electric valves, sizes 3 inches and smaller shall be rigid, unplasticized PVC 200 PSI working pressure extruded from virgin parent material of the type specified on the drawings. The pipe shall be homogenous throughout and free from cracks, holes, foreign materials, blisters, wrinkles, and permanently marked with the manufacturer's name, material size, and schedule type. Pipe must bear the NFS seal.
- E. All mainline piping and underground piping under continuous pressure shall be rigid unplasticized PVC-Class 200 PSI working pressure extruded from virgin parent material of the type specified on the drawings. The pipe shall be homogenous throughout and free from visible cracks, holes, and foreign materials, blisters, wrinkles, and dents.
- F. All plastic fittings to be installed shall be molded fittings manufactured of the same material as the pipe and shall be suitable for solvent weld, slip joint ring tight seal, or screwed connections. NO fitting made of other material shall be used except as hereinafter specified.
- G. Slip fitting socket tapers shall be so sized that a dry unsoftened pipe end conforming to these special provisions can be inserted no more than halfway into the socket. Plastic saddle flange fittings will not be permitted. Only schedule 80 pipe may be threaded.

## 2.2 SLEEVES:

- A. All sleeves shall be schedule 40 PVC or stronger. All sleeves are required at every crossing indicated on drawings. (Size Noted)
- B. All sleeves shall be installed under proposed pavement areas prior to subgrade and base construction.
- C. Sleeves shall have a minimum horizontal separation of 18 inches and a maximum of 24 inch clearance below bottom of curb.
- D. The location of all sleeves shown on the plans is schematic. The contractor shall make any adjustments necessary to accommodate existing vegetation, utilities, or other existing conditions.
- E. If the road crossings are designated as being bore locations the bore must be ample size to accommodate the size sleeve specified.

### 2.3 CONTROL SYSTEM:

- A. The automatic controllers shall be made by the same manufacturers as the valves.
- B. Install Rain Check or Mini-Click type shut off device to override the control timer in the event of rain.
- C. 120-volt power shall be supplied by General Contractor as part of the electrical panel installation.

### 2.4 CONTROL WIRE:

- A. Control wire shall be type UF, UL approved for direct burial and shall be gauge 14 or larger for the control wire and gauge 14 or larger for common wire.
- B. Joining of underground wires shall be made with watertight connectors in valve boxes. No splicing between boxes is acceptable.
- C. All wire connections in valve boxes.

### 2.5 IRRIGATION VALVES:

#### A. Zone Control Valves

1. Globe-type diaphragm valves of normally closed design, with PVC bodies and covers. Operation accomplished by means of an integrally mounted heavy-duty 24 volt AC solenoid complying with Nation Electric Code, Class II Circuit, Solenoids shall be completely waterproof, suitable for direct underground burial. Provide a flow stem adjustment in each valve.

### 2.6 VALVE BOXES:

A. All valve boxes shall be installed in thermoplastic valve access boxes of the size required to permit access to the valve. Valve boxes shall include black thermoplastic locking covers.

B. All valve boxes shall be installed on at least a 2 cubic foot gravel base to provide foundation and drainage.

C. All valve box elevations shall be ½ inch below finished grade.

## 2.7 SURGE PROTECTION:

A. Contractor to provide electrical surge protection for the system controller.

2.8 BACKFLOW PREVENTION: As determined by Municipality/Local regulations.

2.9 PRESSURE REGULATOR: As determined by Contractor.

## 3.0 EXECUTUION

### 3.1 EXCAVATION AND BACKFILL

A. Trenches for pipe sprinkler lines shall be excavated to sufficient depth and width to permit proper handling and installation by any other method the Contractor may desire if approved by the Owner, pipe manufacturer, and Designer. The backfill shall be thoroughly compacted and evened off with the adjacent soil level. Selected fill dirt or sand shall be used in filling 4 inches above the pipe. The remainder of the backfill shall contain no lumps or rocks larger than 3 inches in any dimension. The top 12 inches of backfill shall be topsoil, free of rocks subsoil, or trash. Any open trenches or partially backfilled trenches left overnight or left unsupervised shall be barricaded to prevent undue hazard to the public space.

B. The Contractor shall backfill in 6 inch compacted lifts as needed to bring soil to its original density.

### 3.2 INSTALLATION OF PLASTIC PIPE:

A. Plastic pipe shall be installed in a manner that permits expansion and contraction as recommended by the manufacturer.

B. Plastic pipe shall be cut with a handsaw or hacksaw with the assistance of a square in sawing vice or in a manner so as to ensure a square cut. Burrs at cut ends shall be removed prior to installation so that a smooth, unobstructed flow will be attained.

C. All plastic-to-plastic joints shall be solvent weld joints or slip seal joints. Only the solvent recommended for the pipe and fittings shall be installed as outlined and instructed by the pipe manufacturer. The Contractor shall assume full responsibility for the correct installation.

D. The joints shall be allowed to set at least 24 hours before pressure is applied to the system on PVC pipe.

### 3.3 CONTROLLER AND ELECTRICAL CONNECTIONS:

A. All electrical connections shall conform to the National Electric Code, latest edition.

B. Control wires installed beneath walks, drives, or other permanent surfaces shall be placed in sleeves.

C. Wires shall be spliced only at valve boxes.

D. Leave 24 inch loop of wire at each valve for expansion/contraction and servicing.

E. Controllers and valves shall be from the same company (e.g. Rain Bird, Hunter, or approved equal).

F. 120 VAC electrical power supply to the controller location shall be supplied by others.

### 3.4 FLUSHING AND TESTING:

A. After new sprinkler piping and risers are in place and connected for a given section and all necessary division work has been completed and prior to the installation of sprinkler heads all control valves shall be opened and a full head of water used to flush out the system.

B. Sprinkler main shall be tested under normal water pressure for a period of 12 hours. If leaks occur, repair and repeat the test. Give Landscape Architect 48 hours notice prior to testing.

C. Testing of the system shall be performed after completion of the entire installation and any necessary repairs shall be made at the Contractor's expense to put the system in good working order before final payment by Owner.

D. Adjustment of the sprinkler heads and automatic equipment will be done by the Contractor upon completion of installation to provide optimum performance. Minor adjustments during the guarantee period will be made by Owner.

E. After completion, testing, and acceptance of the system, the Contractor will instruct the Owner's personnel in the operation and maintenance of the system.

## 4.0 ACCEPTANCE AND GUARANTEE

### 4.1 SUBSTANTIAL COMPLETION:

- A. Submit request for inspection for substantial completion to the Landscape Architect at least 48 hours prior to the anticipated date of inspection and testing (refer to Paragraph 3.3 TESTING, herein).
- B. Submit Record Drawings and Maintenance Manual to the Landscape Architect with request for inspection (refer to Paragraph 3.4 FLUSHING AND TESTING, herein).
- C. Review the work jointly with the Owner and Landscape Architect for Substantial Completion.
- D. Upon completion of repairs and replacements found necessary at the time of review, the Owner and Landscape Architect will confirm the date of Substantial Completion of the work.
- E. The date of Substantial Completion will constitute the date of the One-Year Guarantee.

#### 4.2 GUARANTEE:

- A. Guarantee all work, products, equipment, and materials for one (1) year, beginning at Date of Substantial Completion.
- B. During the period of the Guarantee, replace immediately, with no additional compensation, all work not functioning correctly; make adjustments as necessary to maintain complete coverage; make good any other damage, loss, destruction, or failure. Repairs and replacements shall be done promptly and at no additional cost to the Owner.
- C. Repair damage to grade, plants, and other work or property as necessitated due to irrigation defects, repairs, replacement or adjustment.
- D. If the replacement is not acceptable during or at the end of the Guarantee Period, the Owner may elect either subsequent replacement or credit. Replacement products shall have a similar one-year guarantee from the time of replacement. E. Guarantee applies to all losses with the exception of those due to Acts of God, vandalism, or Owner neglect, as determined by the Landscape Architect.

#### 4.3 FINAL INSPECTION AND ACCEPTANCE:

- A. At end of Guarantee Period and upon request for inspection, jointly review all guaranteed work for Final Acceptance.
- B. Submit written request for inspection for Final Acceptance to the Landscape Architect at least 2 weeks prior to anticipated date of inspection; include list of work provisionally accepted and list of work replaced during Guarantee Period.
- C. Upon completion by the Contractor of all required repairs and replacements, the Owner and the Landscape Architect will confirm the date of Final Acceptance of the work.

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END OF SECTION 02810

**SPECIFICATION SHEET** **FEBCO®**

# Series 765

## Pressure Vacuum Breakers

Size: 1/2" - 2" (15mm - 50mm)

The FEBCO Series 765 Pressure Vacuum Breakers are used to protect against health hazard and non-health hazard backsiphonage conditions in industrial plants, cooling towers laboratories, laundries, swimming pools and lawn sprinkler systems.

### Features

- All bronze body for durability. One check valve and an air opening port in one assembly.
- Lightweight poppet seals air opening under minimum flow conditions.
- Simple service procedures. All internal parts serviceable in line from the top of the unit.
- Designed for minimum head loss.
- Engineered plastic bonnet protect valve bodies from freeze damage.
- Optional union end ball valves for easy removal and ultimate freeze protection.
- End Connections – NPT ANSI/ASME B1.20.1

### Operation

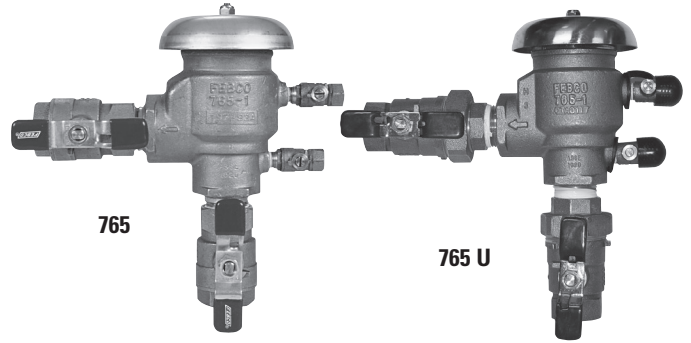
The FEBCO 765 PVB is designed to be installed to provide protection against backsiphonage of toxic or non-toxic liquids. It consists of a spring loaded check valve which closes tightly when the pressure in the assembly drops below 1psi or when zero flow occurs, plus, an air relief valve that opens to break a siphon when the pressure in the assembly drops to 1psi.

### Specifications

Pressure Vacuum Breaker assemblies shall be installed to withstand pressure for long periods and to prevent backflow of contaminated water into the potable water system in backsiphonage conditions. The Pressure Vacuum Breaker assembly shall consist of a single spring loaded check valve which closes tightly when water flow through the assembly drops to zero, and a single air relief valve that opens to break the siphon when pressure drops to 1psi. The assembly shall include two resilient seated shut-offs and two resilient seated test cocks, considered integral to the assembly. Assemblies must be factory backflow tested. The check valve and air inlet valve must be constructed to allow in-line servicing of the assembly. The valve body shall be constructed of bronze. The check, poppet and bonnet assembly shall be constructed of engineered plastic to protect the valve body from freeze damage.

Pressure Vacuum Breaker assemblies shall be installed a minimum of 12" (300mm) above the highest downstream outlet, and the highest point in the downstream piping. The assembly shall be rated to 150psi working pressure and water temperature from 32°F to 140°F. The assembly shall meet the specifications of the USC FCCC & HR Manual.

Pressure Vacuum Breaker assemblies shall be FEBCO Series 765 or prior approved equal.



### Approvals – Standards

- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.



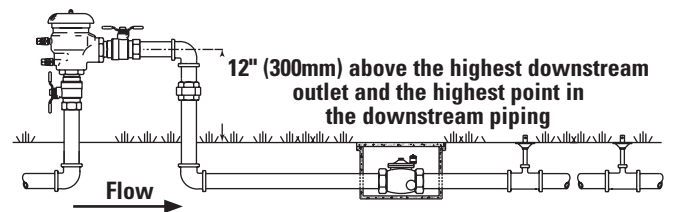
### Applications

PVB assemblies are used to protect against health hazard and non-health hazard backsiphonage conditions in industrial plants, cooling towers laboratories, laundries, swimming pools and lawn sprinkler systems.

### Typical Installation

Pressure Vacuum Breaker assemblies should be installed at least 12" (300mm) above the highest piping and outlet downstream of the assembly to preclude backpressure. Assemblies should be installed so they are easily accessible for maintenance, periodic testing, and where discharge will not be objectionable. They should be protected from freezing. If the assemblies are subject to freezing temperatures, the freeze protection procedures outlined in "Service Instruction Freeze Protection Model 765" must be followed. Assemblies must not be installed where backpressure could occur.

The discharge pressure shall be maintained above 3.0psi on 1/2" - 1 1/4" (15 - 32mm) sizes and 5.0psi on 1 1/2" - 2" (40 - 50mm) sizes to insure seating of the spring loaded air inlet poppet.



Thermal water expansion and/or water hammer down stream of the backflow preventer can cause pressure increases. Excessive pressure should be eliminated to avoid possible damage to the system and assembly.

Job Name \_\_\_\_\_

Job Location \_\_\_\_\_

Engineer \_\_\_\_\_

Approval \_\_\_\_\_

Contractor \_\_\_\_\_

Approval \_\_\_\_\_

Contractor's P.O. No. \_\_\_\_\_

Representative \_\_\_\_\_

FEBCO product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact FEBCO. FEBCO reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on FEBCO products previously or subsequently sold.

## Pressure – Temperature

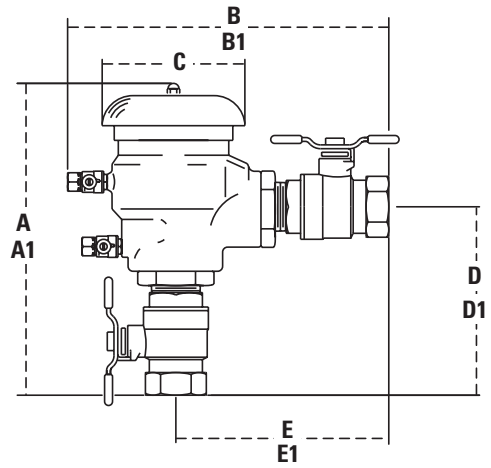
Max. Working Pressure:	150psi (10.3 bar)
Hydrostatic Test Press:	300psi (20.7 bar)
Temperature Range:	32°F to 140°F (0°C to 60°C)

## Materials

Main Valve Body:	Bronze
Elastomers:	Nitrile

## Models

- Union End Ball Valves



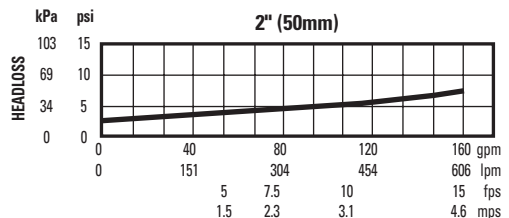
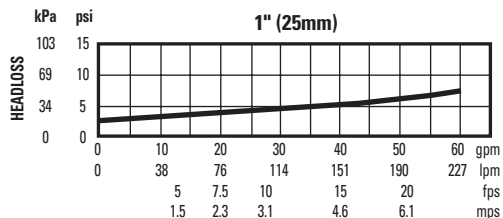
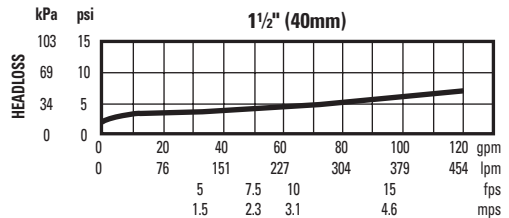
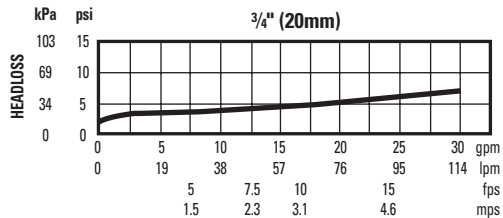
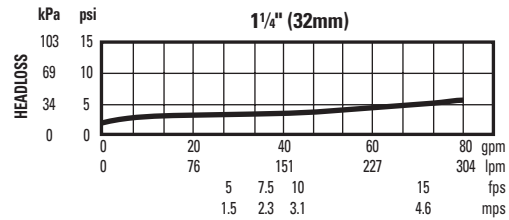
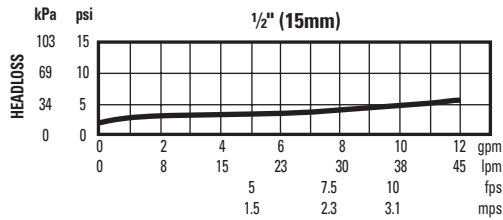
## Dimensions – Weights

Size: ½" - 2" (15 - 50mm)

SIZE (DN)		DIMENSIONS																		WEIGHT	
in.	mm	A		A1 (union)		B		B1 (union)		C		D		D1 (union)		E		E1 (union)		lbs.	kgs.
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm		
½	15	6¼	159	7	178	6¾	172	7½	197	2½	64	¾	95	4½	114	¼	108	5	127	2.6	1.2
¾	20	6½	165	7⅞	187	7	178	7⅞	200	2½	64	4	102	4⅞	124	½	114	5⅞	137	2.9	1.3
1	25	8¾	222	9⅝	245	9	229	9⅝	252	4	102	5¼	133	6⅜	157	6	152	6⅝	176	5.9	2.7
1¼	32	9¼	235	10¼	260	10	254	11	279	4	102	6¼	159	7¼	184	7	178	8	203	7.0	3.2
1½	40	11¾	299	12⅞	327	11½	292	12⅞	321	6½	165	7¼	184	8⅞	213	7¾	197	8¾	225	14.8	6.7
2	50	12½	318	13¾	349	12¼	311	13½	343	6½	165	8	203	9¼	235	8½	216	9¾	248	16.5	7.5

Note: Weights shown do not include union end ball valves and are approximate. Dimensions shown are nominal, allowance must be made for normal manufacturing tolerances.

## Capacity



A Watts Water Technologies Company



ISO 9001-2000  
CERTIFIED

USA: 4381 N. Brawley • Ste. 102 • Fresno, CA • 93722 • Tel. (559) 441-5300 • Fax: (559) 441-5301 • www.FEBCOonline.com  
Canada: 5435 North Service Rd. • Burlington, ONT. • L7L 5H7 • Tel. (905) 332-4090 • Fax: (905) 332-7068 • www.FEBCOonline.ca

## AFTER THREE DECADES, THE WORLD'S BEST SELLING ROTOR IS STILL NUMBER ONE.

### FEATURES

- Model: 4"
- Arc setting: 40 to 360 degrees
- Nozzle choices: 27 total
- Nozzle racks: #1 to #12 red, 1.5 to 8.0 blue, #4 LA to #10 LA gray
- Factory installed rubber cover
- Through-the-top arc adjustment
- Quick check arc mechanism
- Water lubricated gear-drive
- Warranty period: 2 years

### ADVANCED FEATURES

- Low angle nozzle choices

### OPERATING SPECIFICATIONS

Radius: 22' to 52'

Flow rate: 0.5 to 14.1 GPM

Recommended pressure range: 25 to 70 PSI

Operating pressure range: 20 to 100 PSI

Precipitation rates: 0.4 in/hr approx.

Nozzle trajectory: Std = 25 degrees, Low angle = 13 degrees

### FACTORY INSTALLED OPTIONS

Nozzles: #5 to #8 red, 1.5 to 4.0 blue

### USER INSTALLED OPTIONS

Drain check valve (up to 4' of elevation; P/N 142300)



**PGP-ADJ:** Overall height: 7 $\frac{1}{8}$ "  
Pop-up height: 4"  
Exposed diameter: 1 $\frac{3}{4}$ "  
Inlet size:  $\frac{3}{4}$ " female NPT



## SPECIFICATIONBUILDER

[www.hunterindustries.com/PGP](http://www.hunterindustries.com/PGP)

MODELS	STANDARD FEATURES	NOZZLE OPTIONS
PGP-ADJ-B = 4" pop-up	Adjustable arc, with BLUE nozzle rack	1.5 to 4.0 = Factory installed nozzle number
PGP-ADJ = 4" pop-up	Adjustable arc, with RED nozzle rack	#5 to #8 = Factory installed nozzle number
PGP-ATR = Impact replacement	Adjustable arc, with RED nozzle rack	#7 = Factory installed nozzle number

### EXAMPLES

<b>PGP-ADJ</b>	4" pop-up, adjustable arc
<b>PGP-ADJ-B - 3.0</b>	4" pop-up, adjustable arc, and 3.0 BLUE nozzle
<b>PGP-ADJ - 07</b>	4" pop-up, adjustable arc, and #7 RED nozzle



## 1800™ Series Spray Heads

### Industry's Leading Spray Heads

Trusted for over 30 years, 1800 Series Spray Heads have provided unmatched durability, reliability, and performance.

Superior components and features make the 1800 Series Spray Head the spray head of choice for a wide variety of applications.

### Features

Co-molded, pressure-activated, multi-functional wiper seal assures positive seal without excess "flow-by" which enables more heads to be installed on the same valve.

- Designed for use with all Rain Bird plastic spray head nozzles – Rotary Nozzles, U-Series, MPR, VAN and XPCN Series.
- Precision controlled flush at pop-down clears debris from unit, assuring positive stem retraction in all soil types.
- Strong stainless steel spring provides reliable stem retraction.
- Ratchet mechanism on all models allows easy nozzle pattern alignment without tools.
- Pre-installed 1800 Pop-Top™ flush plug blocks debris from entering after flushing. Allows for easy nozzle installation.
- Constructed of time-proven UV-resistant plastic and corrosion resistant stainless steel parts, assuring long product life.
- All sprinkler components are removable from the top without special tools, providing for quick and easy flushing and maintenance of the sprinkler.
- Side inlets featured on 1806, 1806PRS, 1812, and 1812PRS models only.
- Five-year trade warranty.

### Operating Range

- Spacing: 2.5 to 24 feet (0.8 to 7.3 m)
- Pressure: 15 to 70 psi (1.0 to 4.8 bar)

### Specifications

- Flow-by: 0 at 8 psi (0.6 bar) or greater; 0.1 gpm (0.02 m<sup>3</sup>/h; 0.006 l/s) otherwise

### Dimensions/Models

- ½" (15/21) NPT female threaded inlet
- Models and height:
  - 1802:** 4" (10 cm) body height; 2" pop-up height (5 cm)
  - 1803:** 4⅞" (12 cm) body height; 3" pop-up height (7.6 cm)
  - 1804:** 6" (15 cm) body height; 4" pop-up height (10 cm)
  - 1806:** 9⅜" (24 cm) body height; 6" pop-up height (15 cm)
  - 1812:** 16" (40 cm) body height; 12" pop-up height (30 cm)
- Exposed surface diameter: 2¼" (5.7 cm)



### How To Specify

#### 1804 - SAM - PRS - P45

<p><b>Model</b> 1804: 4" (10.2 cm) pop-up height</p>	<p><b>Optional Feature SAM:</b> Seal-A-Matic™ check valve</p>	<p><b>Optional Feature PRS:</b> 30psi (2.1 bar) in-stem pressure regulation</p> <p><b>P45:</b> 45psi (3.1 bar) in-stem pressure regulation</p>
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*Note: SAM feature included with P45 models*



PRS



SAM

### How To Specify

#### 1804 - SAM-P45 - R13-18Q

<p><b>Optional Feature SAM:</b> Seal-A-Matic™ check valve</p> <p><b>P45:</b> 45psi (3.1 bar) in-stem pressure regulation</p>	<p><b>Nozzle</b> Rotary Nozzle</p> <p><b>Radius Range</b> 13-18' (4.0 – 5.5m) 17-24' (5.2 – 7.3m)</p> <p><b>Pattern</b> F: Full (360°) TQ: Three Quarter (270°) TT: Two Third (240°) H: Half (180°) T: Third (120°) Q: Quarter (90°)</p>
--	--

**Model**  
1804: 4" (10.2 cm) pop-up height

*Note: Specify sprinkler bodies and nozzles separately.*



SAM-PRS



SAM-PRS-P45

## 1800° SAM Series

Ideal for use in areas with changing elevations, the 1800 SAM Series offers all 1800 Series features plus:

- Built-in Seal-A-Matic™ (SAM) check valve. Eliminates the need for under-the-head check valves. No parts to be installed at the site.
- Stronger retract spring to accommodate elevation changes up to 14' (4.2 m). One of the strongest springs in the industry.
- Prevents drainage from spray heads at lower elevations. Stops water waste. Ends landscape damage due to flooding and/or erosion.
- Helps retain water in lateral pipes which reduces wear on system components by minimizing water hammer during start-up.
- Designed for use with all Rain Bird plastic spray head nozzles.
- "SAM" stamped on cap for easy identification and maintenance.
- Five-year trade warranty.

## Operating Range

- Spacing: 2.5 to 24 feet (0.8 to 7.3 m)
- Pressure: 25 to 70 psi (1.7 to 4.8 bar)

## Specifications

- SAM capability: holds up to 14 feet (4.2 m) of head; 6 psi (0.3 bar)
- Flow-by: 0 at 8 psi (0.6 bar) or greater; 0.1 gpm (0.02 m<sup>3</sup>/h; 0.006 l/s) otherwise
- Installation: bottom inlet only

## Dimensions

- ½" (15/21) NPT female threaded inlets
- Body height: 1804 SAM - 6" (15 cm), 1806 SAM - 9¾" (24 cm), 1812 SAM - 16" (40 cm)
- Exposed surface diameter: 2¼" (5.7 cm)

## Models

- 1804 SAM: 4" pop-up height (10 cm)
- 1806 SAM: 6" pop-up height (15 cm)
- 1812 SAM: 12" pop-up height (30 cm)

## 1800 PRS Series

Designed for areas with high and/or widely fluctuating water pressures, the 1800 PRS Series has all 1800 Series features plus:

- **PATENTED** PRS pressure regulator built into the stem. No parts to be installed at the site. Saves time and money.
- Maintains constant outlet pressure at 30psi (2.1 bar). Spray nozzles perform best at 30psi. Ensures maximum nozzle performance, even with varying inlet pressures. Maintains constant pressure regardless of nozzles used.
- Restricts water loss by up to 70% if nozzle is removed or damaged. Saves water and money. Reduces possibility of accidents and property damage. Recommended for vandal-prone areas.
- Ensures consistent performance throughout zone if nozzle is removed or damaged. Keeps plant life covered by other spray heads properly irrigated.
- Ends misting and fogging caused by high pressure. Stops water waste. Ensures necessary watering occurs in high pressure or wind conditions.
- Designed for use with all Rain Bird plastic spray head nozzles.
- "PRS" stamped on cap for easy identification and maintenance.
- Five-year trade warranty.

## Operating Range

- Spacing: 2.5 to 24 feet (0.8 to 7.3 m)
- Pressure: 15 to 70 psi (1 to 5 bar)

## Specifications

- Regulates nozzle pressure to an average 30 psi (2.1 bar) with inlet pressures of up to 70 psi (4.8 bar)
- Flow-by: 0 at 8 psi (0.6 bar) or greater; 0.1 gpm (0.02 m<sup>3</sup>/h; 0.006 l/s) otherwise
- Installation: side or bottom inlet
- Side inlet installation not recommended in freezing climates

## Dimensions

- ½" (15/21) NPT female threaded inlets
- Body height: 1804 PRS - 6" (15 cm), 1806 PRS - 9¾" (24 cm), 1812 PRS - 16" (40 cm)
- Exposed surface diameter: 2¼" (5.7 cm)

## Models

- 1804 PRS: 4" pop-up height (10 cm)
- 1806 PRS: 6" pop-up height (15 cm)
- 1812 PRS: 12" pop-up height (30 cm)

## 1800 SAM-PRS Series

Meets the needs of all spray areas, regardless of changing elevation or water pressures. Incorporates all 1800 Series SAM and PRS features. "SAM-PRS" stamped on the cap for easy identification and maintenance.

## Operating Range

- Spacing: 2.5 to 24 feet (0.8 to 7.3 m)
- Pressure: 25 to 70 psi (1.7 to 4.8 bar)

## Specifications

- SAM capability: holds up to 14 feet (4.2 m) of head; 6 psi (0.3 bar)
- Flow-by: 0 at 8 psi (0.6 bar) or greater; 0.1 gpm (0.02 m<sup>3</sup>/h; 0.006 l/s) otherwise
- Installation: bottom inlet only
- Regulates nozzle pressure to an average 30 psi (2.1 bar) with inlet pressures of up to 70 psi (4.8 bar)

## Dimensions

- ½" (15/21) NPT female threaded inlets
- Body height: 1804 SAM-PRS - 6" (15 cm), 1806 SAM-PRS - 9¾" (24 cm), 1812 SAM-PRS - 16" (40 cm)
- Exposed diameter: 2¼" (5.7 cm)

## Models

- 1804 SAM-PRS: 4" pop-up height (10 cm)
- 1806 SAM-PRS: 6" pop-up height (15 cm)
- 1812 SAM-PRS: 12" pop-up height (30 cm)

### 1800 SAM-P45 Series

Meets the needs of spray body applications using Rotary Nozzles regardless of changing elevation or water pressures. Incorporates 1800 Series SAM feature and regulates operating pressure at 45psi (3.1 bar).

- Designed to maximize application efficiency when using Rotary Nozzles.
- Maintains constant outlet pressure at 45psi (3.1 bar) at varying inlet pressures. Maintains constant pressure regardless of nozzle used.
- “SAM-PRS-45” stamped on cap for easy identification and maintenance.
- Five-year trade warranty.

### Operating Range

- Spacing: 13 to 24 feet (4.0 to 7.3 m)
- Pressure: 25 to 70 psi (1.7 to 4.8 bar)

### Specifications

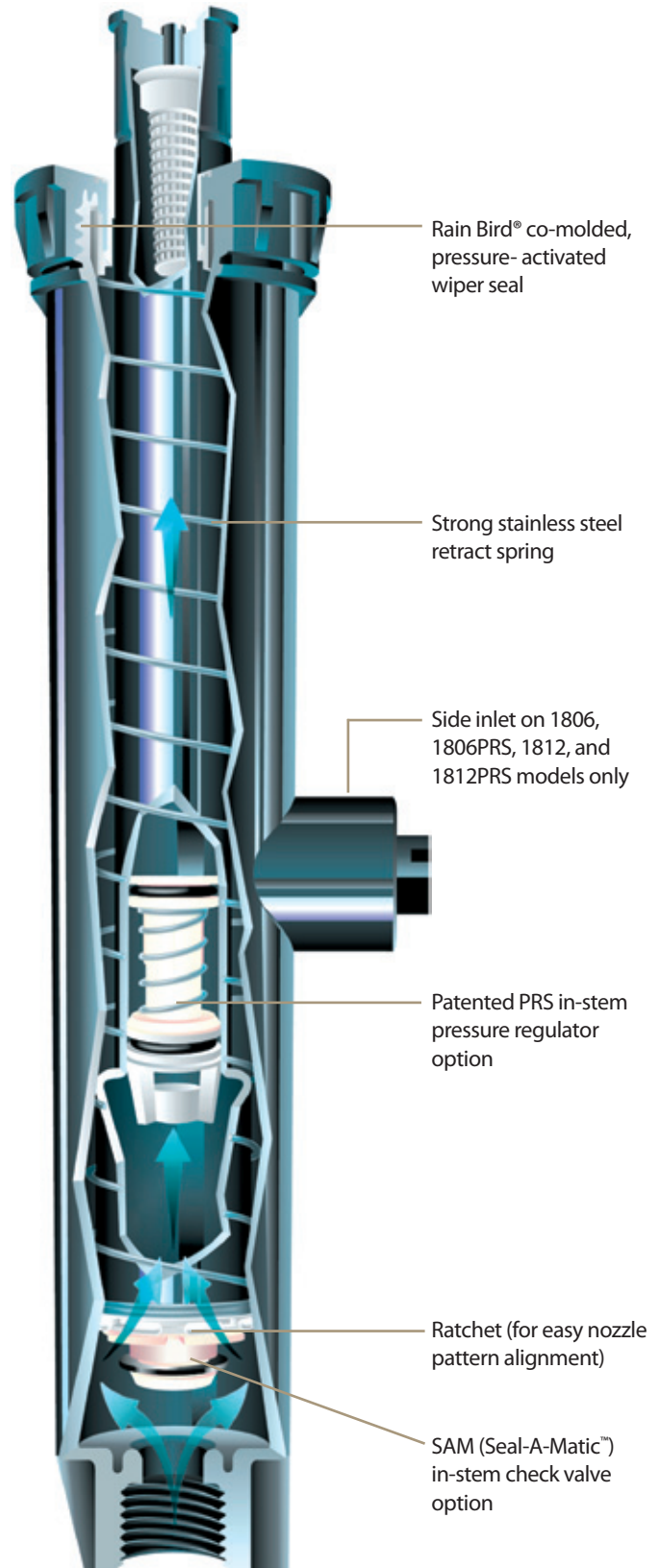
- Regulates nozzle pressure to an average 45 psi (3.1 bar) with inlet pressures of up to 70 psi (4.8 bar)
- SAM capability: holds up to 14 feet (4.2 m) of head; 6 psi (0.3 bar)
- Flow-by: 0 at 8 psi (0.6 bar) or greater; 0.1 gpm (0.02 m³/h; 0.006 l/s) otherwise
- Installation: bottom inlet only

### Dimensions

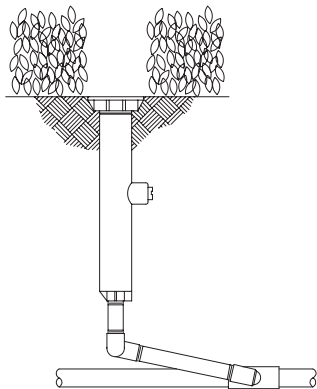
- ½" (15/21) NPT female threaded inlets
- Body height: 1804 SAM-P45 - 6" (15 cm), 1806 SAM-P45 - 9¾" (24 cm), 1812 SAM-P45 - 16" (40 cm)
- Exposed diameter: 2¼" (5.7 cm)

### Models

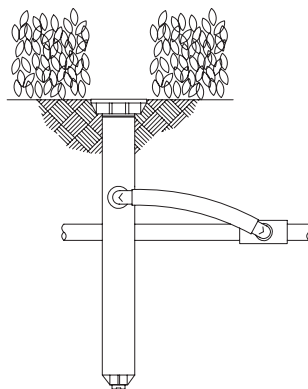
- 1804 SAM-P45: 4" pop-up height (10 cm)
- 1806 SAM-P45: 6" pop-up height (15 cm)
- 1812 SAM-P45: 12" pop-up height (30 cm)



1806 with Swing Joint on Bottom Inlet



1812 with Swing Pipe on Side Inlet



## Specifications

### **1802, 1803, 1804, 1806 and 1812 Pop-up Full or Part Circle Spray Sprinkler**

The sprinkler body, stem, nozzle and screen shall be constructed of heavy-duty, ultra-violet resistant plastic. It shall have a heavy-duty stainless steel retract spring for positive pop-down and a ratcheting system for easy alignment of the pattern. The sprinkler shall have a soft elastomer pressure-activated co-molded wiper seal for cleaning debris from the pop-up stem as it retracts into the case to prevent the sprinkler from sticking up to minimize "flow-by."

The sprinkler shall have a matched precipitation rate (MPR) plastic or brass nozzle with an adjusting screw capable of regulating the radius and flow. The sprinkler shall be capable of housing protective, non-clogging filter screens or pressure compensating screens (PCS) under the nozzle. The screen shall be used in conjunction with the adjusting screw for regulating. The 6" (15 cm) and 12" (30 cm) models shall have both a side and a bottom 1/2" (15/21) (FNPT) inlet for ease of installation.

The sprinkler shall have a Pop-Top™ Flush Plug pre-installed. The plug shall prevent debris from clogging the sprinkler during installation and allow for the system to be flushed before nozzling. The plug shall be bright orange in color and constructed of polypropylene material.

### **1804 SAM, 1806 SAM and 1812 SAM Full or Part Circle Seal-A-Matic™ Pop-up Spray Sprinkler**

#### *Optional Feature Specifications:*

When so indicated on the design, the 4", 6" or 12" high pop-up spray sprinklers shall also include a Seal-A-Matic (SAM) check valve to prevent low-head drainage of up to 14 feet of head. This feature shall require the use of the bottom inlet only. These units shall be identifiable from the top with "SAM" marking on the cap. The sealing device shall be an integral part of the pop-up stem, removable through the top of the sprinkler, and shall seal against the bottom case inlet. It shall create no more than 1 psi pressure drop at the maximum rated flow.

### **1804 PRS, 1806 PRS and 1812 PRS Full or Part Circle Pressure Regulating Pop-up Spray Sprinkler**

#### *Optional Feature Specifications:*

When so indicated on the design, the 4", 6" or 12" high pop-up spray sprinkler shall also include a pressure regulating (PRS) device to prevent high pressure fogging to the nozzle stream. This regulating device shall be an integral part of the pop-up stem, removable through the top of the case. These units shall be identifiable from the top with "PRS" markings on the cap.

The device shall regulate the nozzle pressure to 30 psi for inlet pressures from 35 to 70 psi. Below 35 psi the pressure loss shall not exceed 6 psi.

### **1804 SAM-PRS, 1806 SAM-PRS and 1812 SAM-PRS Full or Part Circle Seal-A-Matic Pressure Regulating Pop-up Spray Sprinkler**

#### *Optional Feature Specifications:*

When so indicated on the design, the 4", 6" or 12" high pop-up spray sprinkler shall also include a Seal-A-Matic (SAM) check valve and a pressure regulating (PRS) device. These units shall be identifiable from the top with "SAM-PRS" markings on the cap.

The check valve shall prevent low-head drainage of up to 14 feet of head. The pressure regulating device shall prevent high pressure fogging of the nozzle stream by regulating the nozzle pressure to 30 psi for inlet pressures from 35 to 70 psi. Below 35 psi the pressure loss shall not exceed 6 psi. These models shall utilize the bottom inlet only.

### **1804 SAM-P45, 1806 SAM-P45, and 1812 SAM-P45 Full or Part Circle Seal-A-Matic Pressure Regulating Pop-up Spray Sprinkler**

#### *Optional Feature Specifications:*

When so indicated on the design, the 4", 6" or 12" high pop-up spray sprinkler shall also include a Seal-A-Matic (SAM) check valve and a 45 psi pressure regulating (P45) device. These units shall be identifiable from the top with "SAM-PRS-45" markings on the cap.

The check valve shall prevent low-head drainage of up to 14 feet of head. The pressure regulating device shall prevent high pressure misting and undesirable performance of the nozzle stream by regulating the nozzle pressure to 45 psi for inlet pressures from 50 to 70 psi. Below 50 psi the pressure loss shall not exceed 6 psi. These models shall utilize the bottom inlet only.

The sprinkler shall be as manufactured by Rain Bird Corporation, Azusa, California.

#### **Rain Bird Corporation**

6991 E. Southpoint Road  
Tucson, AZ 85756  
Phone: (520) 741-6100  
Fax: (520) 741-6522

#### **Rain Bird Technical Services**

(800) RAINBIRD (1-800-724-6247)  
(U.S. and Canada)

#### **Rain Bird Corporation**

970 West Sierra Madre Avenue  
Azusa, CA 91702  
Phone: (626) 812-3400  
Fax: (626) 812-3411

#### **Specification Hotline**

800-458-3005 (U.S. and Canada)

#### **Rain Bird International, Inc.**

1000 West Sierra Madre Ave.  
Azusa, CA 91702  
Phone: (626) 963-9311  
Fax: (626) 852-7343

The Intelligent Use of Water™  
[www.rainbird.com](http://www.rainbird.com)

## The ESP-Modular Controller

### Maximize Your Productivity

A member of the popular ESP family of controllers, the ESP-Modular is designed to maximize your productivity by saving you time and money. The large, easy to read display and intuitive programming sequence make this the most user-friendly controller in its class. The spacious cabinet and terminal locations make installation and wire-up a snap. And features like the Contractor Default™ program make service calls more efficient and earn you more money by taking less time! The ESP-Modular: Maximizing your Productivity.

#### Features

- ESP Programming: Extra-Simple Programming with large numbers and text in the LCD to aid user programming
- Three independent programs with 4 start times each for a total of 12 start times
- Four station base model with the capacity to receive plug-in station modules of three stations each allows the controller to expand from 4 to 13 stations
- Hot swappable modules can be installed while in operation and in any position
- Station 13, called an “Auxiliary Station™” can bypass an active sensor to allow watering even if the other stations are disabled or can operate as a normal station
- Contractor Default™ setting allows the contractor to set his own default program and can be accessed with the push of a button. Useful in easily restoring a schedule that has been altered by a homeowner or to replace a temporary schedule for new seed or sod
- 5-year lithium battery maintains time and date during a power outage.
- 365-day calendar with leap year intelligence means that you can set an “Odd” or “Even” day watering schedule and not worry about changing the date on leap years
- Four irrigation cycle modes for maximum flexibility and compliance to all major watering restrictions (Custom 7-day calendar, 1-31 day cycle and odd/even cycles)
- Non-volatile memory maintains the irrigation schedule indefinitely during a power outage

- Permanent day off feature prevents watering on any day of the week in any cycle mode
- Global Season Adjust (0-200%) allows the user to alter the run time of all the valves in every program with the push of a button
- Dedicated sensor terminals allow the user to easily connect a sensor to the controller for maximum water efficiency. A light (LED) and a message on the LCD indicates when a sensor is active
- Sensor bypass switch allows the user to override an active sensor
- Diagnostic self-setting circuit breaker identifies a valve or wire fault and continues to water operable stations
- Enhanced Diagnostic Feedback™ alerts the user to programming errors and other conditions that may render a schedule inoperable
- “Valve Test Terminal” allows the installer to test the valve wires during installation to determine the valve that each wire is connected to
- Master valve/pump start circuit programmable by station allows operation of connected pump as needed.
- Programmable Delay between station feature allows additional time between zones for water well recovery or slow closing valves
- Spacious heavy-duty cabinet with internal junction box provides lots of room for wiring and eliminates the need to purchase an external j-box for a clean and professional looking installation. Outdoor model comes with key-locking cabinet
- Remote ready connector enables the controller to be used with RM1 and RMX1 remote control systems where available.

#### Operating Specs

- Station timing: 0 to 6 hours for all stations
- Automatic Starts: 4 start times per program on the quarter hour for up to a total of 12 start times per day if using all three programs
- Independent programming schedules:
  - ♦ Custom (water by day of the week)
  - ♦ Odd (water on odd days of the month except 31<sup>st</sup> or 29<sup>th</sup> if leap year)
  - ♦ Even (water on even days of the month)
  - ♦ Cyclic (1-31 days: Water from every other day to once every 31 days)



#### Electrical Specifications

- Input required: 120 VAC ±10%, 60Hz or 230VAC/240VAC ±10%, 50Hz.
- Output: 25.5 VAC 1A
- Surge Protection: Primary input side has 2 built in MOVs (metal oxide varistors) to protect microcircuitry. Output side has 2 built in MOVs for each valve station.
- Power back-up: Lithium coin-cell battery maintains time and date while non-volatile memory maintains the schedule
- Multi-valve station capacity: Up to two 24 VAC, 7VA solenoid valves per station plus a master valve

#### Dimensions

- Width: 10.7 in. (27,2 cm)
- Height: 7.7 in. (19,5 cm)
- Depth: 4.4 in. (11,2 cm)

#### Models

- ESP-4Mi: 4 station indoor model
- ESP-4M: 4 station outdoor model\*
- ESP-SM3: 3-station module

\*Available in 120VAC, 230VAC and 240VAC models.

#### How to Specify

**ESP-4Mi**   **ESP-SM3**

**Controller**  
**Base Model**

ESP-4Mi: Indoor  
ESP-4M: Outdoor

**Modules**

3-Station Module



### Specifications

The controller shall be of a hybrid type that combines electro-mechanical and microelectronic circuitry capable of fully automatic or manual operation. The controller shall be housed in a wall-mountable, weather-resistant plastic cabinet with a key-locking cabinet door (outdoor models only) suitable for either indoor or outdoor installation.

The controller shall have a base unit with 4 stations as well as three expansion slots capable of receiving station modules of three stations each to create a controller of up to 13 stations. Station 13 shall be called an "auxiliary station" and shall have the capability of bypassing an active rain sensor or of functioning as a normal station output. Station timing shall be from 0 minutes to 6 hours. Run time resolution shall be in 1-minute increments from 0 to 59 minutes and 10 minutes from 1 to 6 hours. The LCD shall display "No Run Times" or equivalent icon for 230 VAC models if no run time has been entered for any station in any program.

The controller shall have three separate and independent programs which can have different start times, station timing and watering days. Each program shall have up to 4 start times available. The controller shall stack multiple start times in sequence to prevent hydraulic overload. The LCD shall display "No Start Times" or the equivalent icon for 230VAC models if no start time has been entered for any program. The controller shall be capable of operating two 24 VAC solenoid valves per station plus a master valve or remote pump start relay. The controller shall operate on 120 VAC± 20% at 60Hz (230VAC ± 20% at 50Hz for international models). The controller shall have an electronic, diagnostic circuit breaker that shall sense a station with an electrical overload or short circuit and shall bypass that station and continue operating all other stations.

The controller shall have a 365-day calendar with a permanent day off feature that allows a

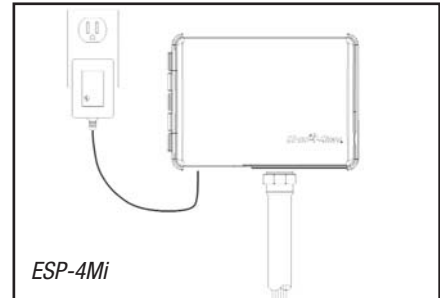
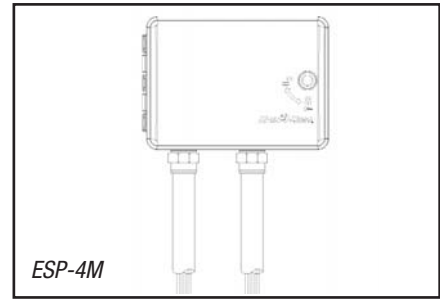
day(s) of the week to be turned OFF on any cycle (odd/even/1-31 day cycle). A day set to "Permanent Off" shall override the normal repeating schedule and shall display the words "Day Always Off/Day Off" in the LCD screen. The controller shall have a seasonal adjust feature adjustable from 0% to 200% in increments of 10%. Seasonal adjust shall effect all programs simultaneously. If seasonal adjust is set to 0% the LCD shall display "SEASONAL ADJ" (equivalent icon for 230 VAC models).

The controller shall have a 12-hour AM/PM or 24 hour military (for 230VAC models) clock with a midnight day change over. The controller shall have a sensor circuit for connection to a rain sensor or to an underground moisture sensor system that will interrupt a scheduled watering under "wet" or "moist" conditions. The controller shall have an indicator on the LCD screen and one LED light to indicate that a sensor is connected and active and that watering has been temporarily disabled.

The controller shall have access to a variety of "hidden features" by turning the dial to a specific location on the dial and pushing the ON OFF buttons simultaneously. These features shall include: 1) save a custom default program 2) retrieve a custom default program 3) bypass an active rain sensor on the Auxiliary Station 4) allow the Auxiliary Station to be interrupted by an active rain sensor 5) Clear memory 6) Set a day as "Permanently Off" 7) Set master valve/pump start circuit by station 8) Set programmable delay between station.

The controller shall have the following manual operations and manual advances for semi-automatic control:

- Run a single valve
- Run multiple manually stacked valves
- Run a semi-automatic program
- Run a test on all valves (all stations with any time assigned regardless of the program) from 1 to 10 minutes



The controller shall have a removable, battery programmable front panel (uses a 9 volt battery [not included]) for conveniently programming the controller away from the installation site or for teaching irrigation scheduling.

The controller shall have the capacity for the program to be erased allowing the user to start programming with a blank controller. The controller shall have multiple knockouts, sizes and locations, including the back of the cabinet, to facilitate installation and provide a clean professional look. The controller shall have a factory default program that runs 10 minutes every day beginning 8 hours after power resumption.

The controller shall have a reset button to reset the controller in the case of micro-controller "lock-up" due to power surges or frequent interruption to the power supply.

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## PGA Series Valves

Versatility at an affordable price.

Whether the job calls for a globe or angle valve, PGA Series valves are the right choice. Loaded with features, these heavy-duty PVC valves are economical, easy to install and built to withstand constant 150 psi (10.35 bar) pressure and 2 to 150 gpm (0.45 to 34.05 m<sup>3</sup>/h; 7.8 to 568 l/m) flows.

The PGA Series from Rain Bird – built to last... and last!

### Features

- Globe and angle configuration for flexibility in design and installation
- PVC and glass reinforced nylon construction
- Filtered pilot flow to resist debris and clogging of solenoid ports
- Slow closing to prevent water hammer and subsequent system damage
- Manual internal bleed operates the valve without allowing water into the valve box
- One-piece solenoid design with captured plunger and spring for easy servicing Prevents loss of parts during field service
- Non-rising flow control handle adjusts water flows as needed
- Normally closed, forward flow design

### Options (order separately)

- Accommodates optional, field installed PRS-D pressure regulating module
- Optional purple flow control handle for easy identification of non-potable water system
  - PGA-NP-HAN (1" and 1½")
  - PGA-NP-HAN2 (2")
- Accepts latching solenoid for use with Rain Bird battery-operated controllers up to 150 psi (10.35 bar)
- Compatible with ESP-LXD decoders

### Operating Range

- Pressure: 15 to 150 psi (1.04 to 10.35 bar)
- Flow: 2 –150 gpm (0.45 to 34.05 m<sup>3</sup>/h; 7.8 to 568 l/m)
- Flow with PRS-D: 5 –150 gpm (1.14 to 34.05 m<sup>3</sup>/h; 19.2 to 568 l/m)
- Water Temperature: up to 110° F (43° C)
- Ambient Temperature: up to 125° F (52° C)

### Electrical Specifications

- Power: 24 VAC 50/60 Hz (cycles/sec) solenoid

- Inrush current: 0.41 A (9.84 VA) at 60 Hz
- Holding current: 0.28 A (6.72 VA) at 60 Hz
- Coil resistance: 30-39 Ohms

### Models

- 100PGA 1" (26/34)
- 150PGA 1½" (40/49)
- 200PGA 2" (50/60)
- *BSP threads available; specify when ordering.*

### Dimensions

Size	Height	Length	Width
100PGA	7¼" (18.4 cm)	5½" (14.0 cm)	3¼" (8.3 cm)
150PGA	8" (20.3 cm)	6¾" (17.2 cm)	3½" (8.9 cm)
200PGA	10" (25.4 cm)	7¾" (19.7 cm)	5" (12.7 cm)

Note: The PRS-D option adds 2" (5.1 cm) to valve height.

### PGA Series Valve Pressure Loss (psi)

Flow gpm	100-PGA Globe 1"	100-PGA Angle 1"	150-PGA Globe 1½"	150-PGA Angle 1½"	200-PGA Globe 2"	200-PGA Angle 2"
1	5.1	4.3	-	-	-	-
5	5.5	5.0	-	-	-	-
10	5.9	5.5	-	-	-	-
20	6.0	5.6	-	-	-	-
30	6.4	5.5	1.9	1.3	-	-
40	7.0	7.5	3.2	2.0	1.2	1.0
50	-	-	4.8	3.0	1.5	0.9
75	-	-	11.1	6.5	3.0	1.7
100	-	-	19.2	11.7	5.5	3.0
125	-	-	-	-	8.6	4.8
150	-	-	-	-	12.0	6.5

### PGA Series Valve Pressure Loss (bar)

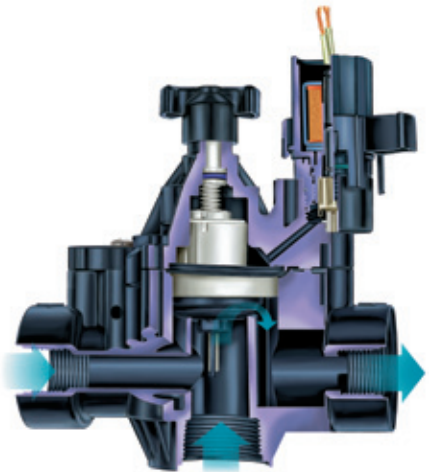
Flow m <sup>3</sup> /h	Flow l/m	100-PGA Globe 2.5cm	100-PGA Angle 2.5cm	150-PGA Globe 3.8cm	150-PGA Angle 3.8cm	200-PGA Globe 5.1cm	200-PGA Angle 5.1cm
0.23	3.8	0.35	0.30	-	-	-	-
0.6	10	0.36	0.32	-	-	-	-
1.2	20	0.38	0.35	-	-	-	-
3	50	0.41	0.38	-	-	-	-
6	100	0.43	0.38	0.10	0.07	-	-
9	150	0.48	0.51	0.22	0.14	0.08	0.07
12	200	-	-	0.38	0.23	0.12	0.07
15	250	-	-	0.61	0.36	0.17	0.10
18	300	-	-	0.86	0.51	0.24	0.13
21	350	-	-	1.16	0.70	0.33	0.18
24	400	-	-	-	-	0.43	0.23
27	450	-	-	-	-	0.54	0.30
30	500	-	-	-	-	0.66	0.36
34	568	-	-	-	-	0.83	0.45

#### Notes

- 1) Loss values are with flow control fully open.
- 2) PRS-D module recommended for all flow ranges.

#### Recommendations

- 1) Rain Bird recommends flow rates in the supply line not to exceed 7.5 ft./sec. (2.29 m/s) in order to reduce the effects of water hammer.
- 2) For flows below 5 gpm (1.14 m<sup>3</sup>/h; 19.21 l/m), Rain Bird recommends use of upstream filtration to prevent debris from collecting below the diaphragm.
- 3) For flows below 10 gpm (2.27 m<sup>3</sup>/h; 37.8 l/m) Rain Bird recommends the flow control stem be turned down two full turns from the fully open position.



### PGA Series Temperature Rating

Water Temp.	Continuous Pressure
73° F (23° C)	150 psi (10.40 bar)
80° F (27° C)	132 psi (9.10 bar)
90° F (32° C)	112 psi (7.70 bar)
100° F (38° C)	93 psi (6.40 bar)
110° F (43° C)	75 psi (5.20 bar)

### How To Specify

100	-	PGA	-	PRS-D
Size		Model		Optional Feature
100: 1" (26/34)		PGA		PRS-Dial: pressure regulating module (must be ordered separately)
150: 1½" (40/49)				
200: 2" (50/60)				

Note: Valve and PRS-Dial module must be ordered separately. For non-U.S. applications, it is necessary to specify NPT or BSP thread type.

## Specifications

The electric remote control valve shall be a normally closed 24 VAC 50/60 Hz (cycles/sec) solenoid actuated globe/angle pattern design. The valve pressure rating shall not be less than 150 psi (10.35 bar). The valve shall have the following characteristics (circle one):

Flow rate: \_\_\_\_\_ gpm    m<sup>3</sup>/h    l/m

Pressure loss not to exceed: \_\_\_\_\_ psi    bar

The valve body and bonnet shall be constructed of high-impact, water-resistant PVC for the body and glass-filled nylon for the bonnet with stainless steel screws.

The valve shall have manual open/close control (internal bleed) for manual opening and closing of valve without electrically energizing the solenoid. The valve's internal bleed shall prevent flooding of the valve box.

The valve shall house a fully-encapsulated, one-piece solenoid. The solenoid shall have a captured plunger with a removable retainer for easy servicing, and a leverage handle for easy turning. This 24 VAC 50/60 Hz solenoid shall open with 19.6 VAC minimum at 150 psi (10.35 bar). At 24 VAC, average inrush current shall not exceed 0.41 amps. Average holding current shall not exceed 0.28 amps.

The valve shall have a flow control stem for accurate manual regulation and/or shut off of outlet flow. The valve must open or close in less than 1 minute at 150 psi (10.35 bar), and less than 30 seconds at 20 psi (1.38 bar).

The valve construction shall provide for all internal parts to be removable from the top of the valve without disturbing the valve installation. The body shall have a removable O-ringed plug for installation in either globe or angle configuration.

## Optional Feature Specification

### PRS-D Pressure Regulating Module 100PGA-PRS-D, 150PGA-PRS-D, 200PGA-PRS-D

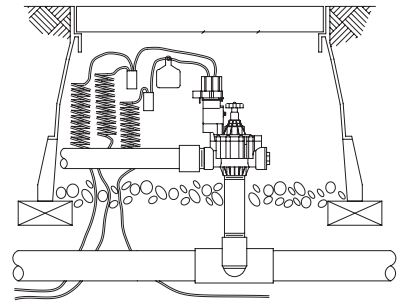
When so indicated on the design, the electric remote control valve shall have a pressure regulating module (PRS-D) capable of regulating outlet pressure between 15 and 100 psi ( $\pm 3$  psi) (1.04 and 6.90 bar ( $\pm 0.21$  bar)).

The PRS-D module shall have an adjusting knob for setting pressure and Schrader valve connection for monitoring pressure. The pressure shall be adjustable from the PRS-D when the valve is internally manually bled or electrically activated.

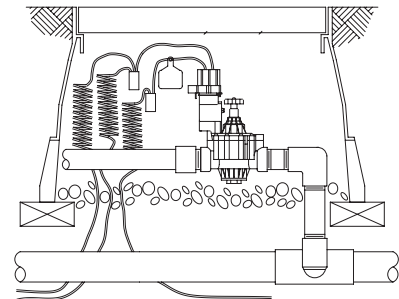
### Non-Potable Flow Control Handle PGA-NP-HAN1 - Fits 1" and 1 1/2" PGA-NP-HAN2 - Fits 2"

When so indicated on the design, the valve shall have a purple flow control handle to indicate to the user that non-potable water is being used. There shall be no difference between the black and purple handles except for the color.

Plastic Electric Remote Control  
PGA Valve (with PRS-D) using bottom inlet



Plastic Electric Remote Control  
PGA Valve (with PRS-D) using side inlet



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## RSD Series Rain Sensor

“Dial into the Convenience and Value”

The Rain Bird RSD Series Rain Sensor is an easy to install, durable and visually pleasing rain sensor device suitable for 24 VAC residential and commercial applications. This high-quality product saves water and extends irrigation system life by automatically measuring precipitation and preventing irrigation systems from watering in rainy conditions.

### Features & Benefits

- Automatic rain shutoff prevents overwatering due to natural precipitation
- Robust, reliable design reduces service call backs
- Moisture sensing disks work in a variety of climates
- Different sensor mounts permit speed and flexibility on the job site

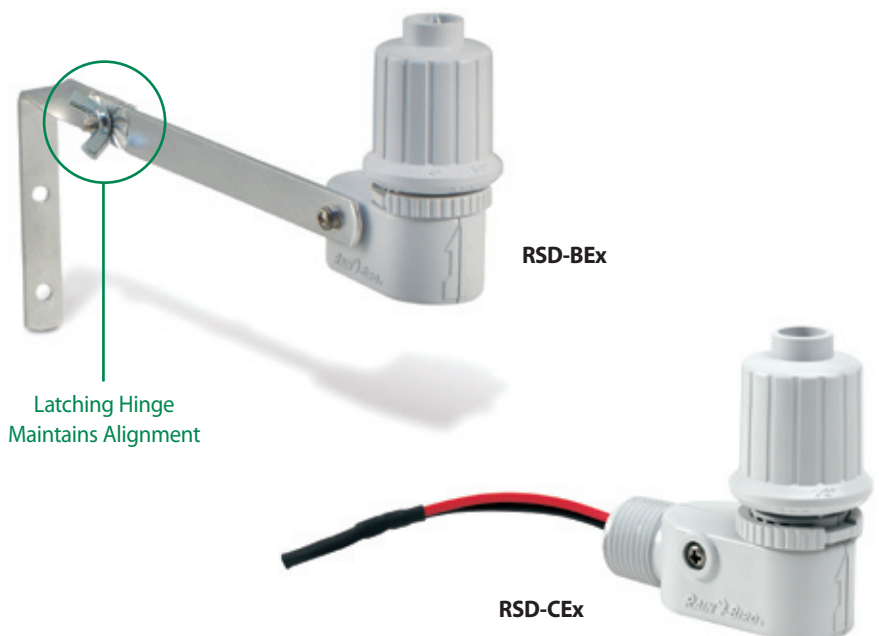
### Models

- RSD-BEx (rain sensor w/ latching bracket, extension wire)
- RSD-CEx (rain sensor w/ threaded adapter, extension wire)

### Electrical Specifications

- Application: Suitable for low voltage 24 VAC control circuits and 24 VAC pump start relay circuits\*
- Switch electrical rating: 3A @ 125/250 VAC
- Capacity: Electrical rating suitable for use with up to ten 24 VAC, 7 VA solenoid valves per station, plus one master valve
- Wire: 25' (7,6 m) length of #20, 2 conductor UV resistant extension wire
- UL, cUL listed; CE, C-Tick approved

\*Not recommended for use with high voltage pump start, pump start relay circuits or devices.



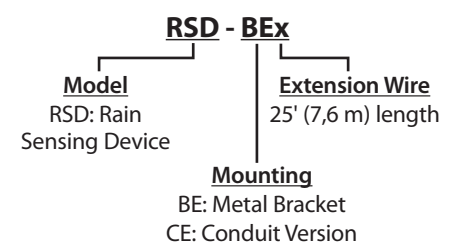
### Mechanical Properties

- Multiple Rainfall Settings from 1/8" - 3/4" (5 - 20 mm) are quick and easy with just the twist of a dial
- Adjustable vent ring helps control drying time
- High-grade, UV resistant polymer body resists the elements
- Available in rugged bracket version (RSD-BEx model comes with 5" latching aluminum bracket) or conduit version (RSD-CEx) for a clean and professional look.

### Dimensions

- RSD-BEx**
- Overall Length: 6.5" (16.5 cm)
  - Overall Height: 5.4" (13.7 cm)
  - Bracket Hole Pattern: 1.25" (3.2 cm)
- RSD-CEx**
- Overall Length: 3" (7.6 cm)
  - Overall Height: 2.75" (7 cm)

### How to Specify/Order



## Specifications

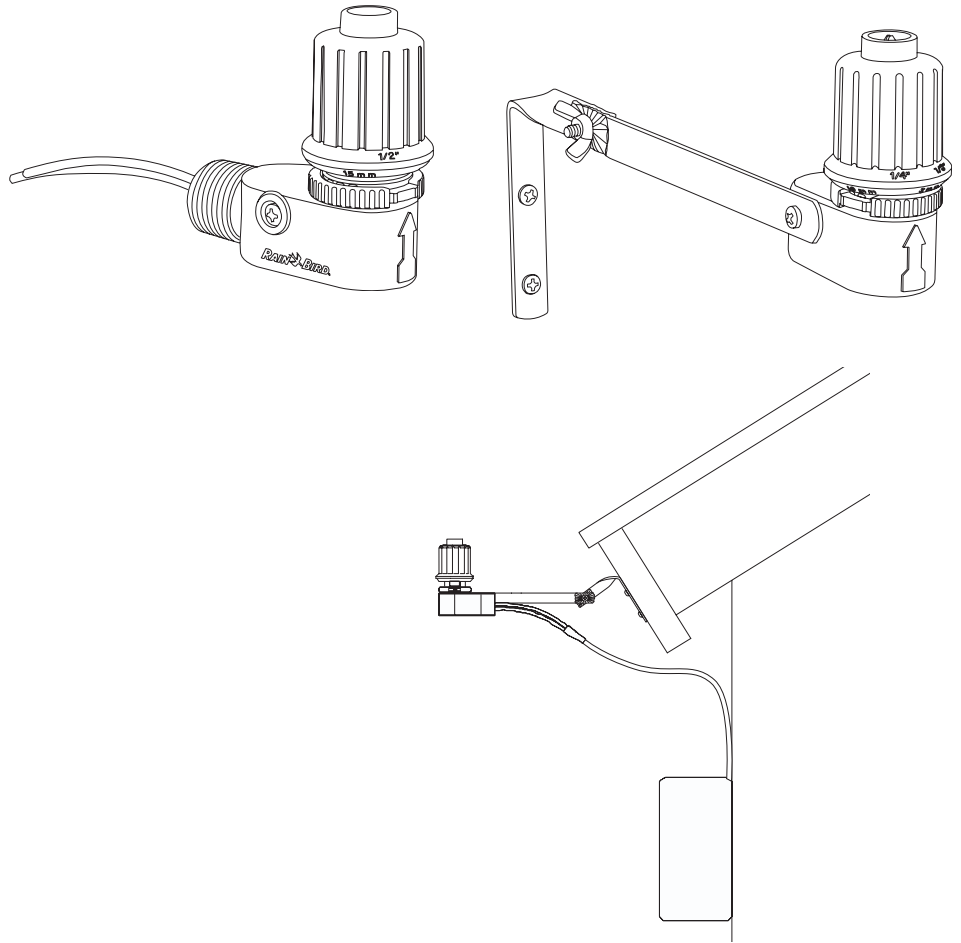
The rain sensor shall employ an electro-mechanical actuating device designed to cause a circuit interrupt that temporarily disables the irrigation controller during periods of significant rainfall. The device shall automatically restore the controller to a normal operating condition after a period of time subsequent to the rainfall. The device shall be suitable to be wired to a normally closed (N.C.) controller sensor port or in series with the valve common.

The device shall be of rugged construction to withstand the elements, including exposure to sunlight.

The device shall include a U.L. listed, 3A @ 125/250 VAC rated electrical switch. The device shall be of sufficient capacity to be used with a maximum of three 24 VAC, 7 VA solenoid valves per station, plus one master valve.

The rain sensor shall incorporate a provision that allows the installer to select from several rainfall settings. The setting increments shall be displayed in both English and metric units. The device shall include a vent ring to help control drying time of the mechanical components.

The Rain Bird RSD Series Rain Sensor shall be manufactured by Rain Bird Corporation, Glendora, California .



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## SECTION 02900

### SEEDING, SODDING & PLANTING

#### 1.1 GENERAL

- A. Submittals: In addition to product certificates, submit the following where applicable:
1. Certification of grass seed/sod from seed/sod vendor for each seed mixture, or for sod.
  2. List of plant suppliers and anticipated delivery dates.
  3. Provide sample or product data of planting mix, top soil, fertilizers, pre-emergent and mulch or any other amendment required for project.
- B. Quality Assurance: Provide trees, shrubs, ground covers, and plants of quality, size, genus, species, and variety indicated, complying with applicable requirements of ANSI Z60.1 "American Standard for Nursery Stock." Materials that do not meet the afore mentioned requirements may be rejected.
- C. Special Warranty: Warrant trees, shrubs and ground covers for a period of one year after date of Substantial Completion, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, abnormal weather conditions unusual for warranty period, or incidents which are beyond Contractor's control.
1. Remove and replace any unhealthy and dead trees and shrubs within the warranty period.
- D. Maintain and establish lawns by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations to produce a uniformly smooth lawn for not less than the following:
1. Seeded Lawns: 60 days after the date of Substantial Completion.
  2. Sodded Lawns: 30 days after date of Substantial Completion.

#### 1.2 PRODUCTS

- A. Trees and Shrubs: Well-shaped, fully branched, healthy, vigorous nursery-grown stock of sizes and grades indicated, free of disease, insects, eggs, larvae, and defects, conforming to ANSI Z60.1.
1. Provide balled and burlapped trees and shrubs unless otherwise specified on drawing.
  2. Provide container grown shrubs, groundcovers and annuals unless otherwise specified on drawing.
- B. Ground Covers and Plants: Established and well rooted in removable containers or integral peat pots and with not less than the minimum number and length of runners required by ANSI Z60.1 for the pot size indicated.
- C. Grass Seed: Fresh, clean, dry, new crop seed complying with the Association of Official Seed Analysts' "Rules for Testing Seeds" for purity and germination tolerances.

1. Seed Mixture: Provide seed of grass species and varieties, proportions by weight, and minimum percentages of purity, germination, and maximum percentage of weed seed as indicated.

D. Sod: Certified turfgrass sod complying with ASPA specifications for machine-cut thickness, size, strength, moisture content, and mowed height, and free of weeds and undesirable native grasses. Provide viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.

1. Species: Provide sod of grass species and varieties, proportions by weight, and minimum percentages of purity, germination, and maximum percentage of weed seed as indicated.

E. Planting Mix: ASTM D 5268, pH range of 5.5 to 7, 4 percent organic material minimum, free of stones 1 inch (25mm) or larger in any dimension, and other extraneous materials harmful to plant growth.

1. Planting mix: Equal parts of sharp sand and ground bark humus.

F. Lime: As necessary or specified; ASTM C 602, Class T, Agricultural limestone.

G. Peat Humus: As necessary or specified; Finely divided or granular texture, with a pH range of 6 to 7.5, composed of partially decomposed moss peat (other than sphagnum), peat humus, or reed-sedge peat.

H. Ground Bark Humus: As necessary or specified; Decomposed, nitrogen-treated, of uniform texture, free of chips, stones, sticks, soil or toxic materials.

I. Bonemeal: As necessary or specified; Commercial, raw, finely ground, minimum of 4 percent nitrogen and 20 percent phosphoric acid.

J. Superphosphate: As necessary or specified; Commercial, phosphate mixture, soluble; minimum of 20 percent available phosphoric acid.

K. Lawn Fertilizer: required for all turf grass areas; Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow- release nitrogen, 50 percent derived from natural organic sources of urea-form, phosphorous, and potassium.

L. Planting Bed Fertilizer: Osmocote classic 13-13-13 8 to 9 month longevity or approved equal. Apply in accordance to manufacturer specifications.

M. Pre-emergent herbicide: Eptam 20-d or approved equal. Apply in accordance to manufacturers specifications.

N. Organic Mulch: Organic mulch, free from deleterious materials and suitable as a top dressing, consisting of ground or shredded bark, wood or bark chips, or shredded hardwood.

### 1.3 EXECUTION

A. Planting mix preparation. Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth. Mix soil amendments and fertilizers with topsoil at rates indicated.

B. Lawn Planting Preparation (Disturbed): Loosen subgrade to a minimum depth of 2 inches (100 mm). Remove stones larger than 1-1/2 (38 mm) in any dimension and sticks, rubbish, and other extraneous materials. **DO NOT** disturb roots of existing trees to remain.

1. Spread planting mix to depth required to provide even, level grades, at elevations shown, after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen.

2. Place approximately ½ the thickness of planting mix required, Work into top of loosened subgrade to create a transition layer and then place remainder of topsoil mixture.

C. Lawn Planting Preparation (Undisturbed): Where lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface soil stripping operations, spot treat with liquid herbicide and remove and dispose of significant areas of undesirable vegetation and weeds.

1. Lightly hand rake area and remove all sticks, rocks and other debris. Apply planting mix and initial fertilizers. Trim high areas and fill depressions.

D. Moisten prepared lawn areas before planting when soil is dry and allow surface to dry before planting.

E. Ground cover and Plant Bed preparation: Loosen subgrade of planting area to a minimum depth of 6 inches (150 mm). Remove stones larger than 1-1/2 inches (38 mm) in any dimension and sticks, roots, rubbish, and other extraneous materials.

1. Install planting soil mixture to depth required to meet thickness, grades, and elevations shown, after light rolling and natural settlement. Place approximately ½ the thickness of planting soil mixture required. Work into top of loosened subgrade to create a transition layer and then place remainder of planting soil mixture.

F. Excavation for Trees and Shrubs: Excavate pits with vertical sides and bottom of excavation slightly raised at center to assist drainage. Excavate approximately 1-1/2 times as wide as ball diameter and deep enough to allow placing of root ball on a setting layer of planting soil. Loosen hard subsoil in bottom of excavation. Exercise caution when excavating near existing trees so as not to unduly harm existing root structure. Shift location of proposed trees slightly and as necessary to accommodate existing roots.

G. Planting Trees and Shrubs: Set stock plumb and in center of pit or trench with top of ball raised above adjacent finish grades.

1. Place setting layer of compacted planting soil.

2. Remove burlap and wire baskets from tops of root balls and partially from sides, but do not remove from under balls. Do not use planting stock if ball is cracked or broken.

3. Place backfill around ball in layers, tamping to settle backfill and eliminate voids and air pockets.

4. Dish and tamp top of backfill to form a 3 inch (75 mm) high mound around the rim of the pit. Do not cover top of root ball with backfill.

H. Tree and Shrub pruning: Prune, thin, and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Do not cut tree leaders; remove only injured or dead branches from flowering trees. Prune shrubs to retain natural character. Shrub sizes indicated are size after pruning.

I. Planting Ground Cover and Plants: Plant spacing according to plan, unless otherwise indicated. Dig holes large enough to allow spreading of roots, and backfill with planting soil. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

J. Planting Bed Fertilizer: Install per manufacturers recommendations.

K. Pre-Emergent Herbicide: Install per manufacturers recommendations.

L. Mulching: Completely cover area to be mulched. Apply mulch and finish level with adjacent finish grades. Do not place mulch against trunks or stems.

1. Mulch Type and Thickness: Cut pine straw (bags), 4 inches (100 mm) thick as indicated in all bed areas on drawings.

M. Seeding Lawns: Sow seed with a spreader or a seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (km/h). Evenly distribute seed by sowing equal quantities in 2 directions at right angles to each other. Rake seed lightly into top 1/8 inch (3 mm) of topsoil, roll lightly, and water with a fine spray.

1. Seeding Rate: 3 to 4 pounds per 1000 sq. ft. (1.5 to 2 kg per 100 sq. m.)

2. Protect seeded areas with slopes less than 1:6 against erosion by spreading straw mulch after completion of seeding operations and anchor by crimping into topsoil. Spread uniformly at a minimum rate of 2 tons per acre (45 kg per 100 sq. m.)

N. Sodding Lawns: Lay sod to form a solid mass with tightly fitted joints within 24 hours of stripping. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between sod pieces; remove excess to avoid smothering sod and adjacent grass.

1. Anchor sod on slopes exceeding 1:6 with wood pegs spaced as recommended by sod manufacturer.

2. Saturate sod with fine spray within 2 hours of planting. During first week, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches (38 mm) below the sod.

O. Edgings: Install edgings where indicated and anchor with stakes driven below top elevation of edging according to manufacturer's recommendations.

P. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and dispose of legally at a location off the owners property.

END OF SECTION 02900



# ***DIVISION 3***

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## **CONCRETE**

DAMMON ENGINEERING, INC.  
554 OLD SPANISH TRAIL  
SLIDELL, LOUISIANA 70458  
Phone: 985-649-5832  
Fax: 985-641-5950  
Dammonengineering.com





## SECTION 03051

### CEMENT CONCRETE PAVEMENT

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes exterior cement concrete pavement for the following:
  - 1. Walkways.
- B. Related Sections include the following:
  - 1. Division 2 Section "Earthwork" for subgrade preparation, grading, and subbase course.

##### 1.3 DEFINITIONS

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

##### 1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated on the drawings.
- B. Design Mixtures: Provide Submittal for each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- C. New sidewalks shall match existing concrete in "washed gravel" appearance. Submittal will be required demonstrating how this appearance will be achieved.

##### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.
- C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
  1. Before submitting design mixtures, review concrete pavement mixture design and examine procedures for ensuring quality of concrete materials and concrete pavement construction practices. Require representatives, including the following, of each entity directly concerned with concrete pavement, to attend conference:
    - a. Contractor's superintendent.
    - b. Concrete pavement subcontractor.

## 1.6 PROJECT CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

## PART 2 - PRODUCTS

### 2.1 FORMS

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

### 2.2 CONCRETE MATERIALS

- A. Cementitious Material: Use one of the following cementitious materials, of the same type, brand, and source throughout the Project:
  1. Portland Cement: ASTM C 150, Type I gray. Supplement with the following:
    - a. Fly Ash: ASTM C 618, Class C.
    - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

- B. Normal-Weight Aggregates: ASTM C 33, uniformly graded. Provide aggregates from a single source.
  - 1. Maximum Coarse-Aggregate Size: **1 inch** nominal.
  - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M.
- D. Air-Entraining Admixture: ASTM C 260.
- E. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
  - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
  - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
  - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
  - 7. Synthetic micro polypropylene fibrous reinforcing admixtures: ASTM C1116.

## 2.3 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately **9 oz./sq. yd.** dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
  - 1. Available Products:
    - a. Axim Concrete Technologies; Cimfilm.
    - b. Burke by Edeco; BurkeFilm.
    - c. ChemMasters; Spray-Film.
    - d. Conspec Marketing & Manufacturing Co., Inc.; Aquafilm.
    - e. Dayton Superior Corporation; Sure Film.
    - f. Euclid Chemical Company (The); Eucobar.
    - g. Kaufman Products, Inc.; Vapor Aid.
    - h. Lambert Corporation; Lambco Skin.
    - i. L&M Construction Chemicals, Inc.; E-Con.
    - j. MBT Protection and Repair, ChemRex Inc.; Confilm.
    - k. Meadows, W. R., Inc.; Sealtight Evapre.

- I. Metalcrete Industries; Waterhold.
        - m. Nox-Crete Products Group, Kinsman Corporation; Monofilm.
        - n. Sika Corporation, Inc.; SikaFilm.
        - o. Symons Corporation; Finishing Aid.
        - p. Vexcon Chemicals, Inc.; Certi-Vex EnvioAssist.
- E. Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.
  - 1. Available Products:
    - a. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
    - b. Burke by Edoko; Aqua Resin Cure.
    - c. ChemMasters; Safe-Cure Clear.
    - d. Conspec Marketing & Manufacturing Co., Inc.; W.B. Resin Cure.
    - e. Dayton Superior Corporation; Day Chem Rez Cure (J-11-W).
    - f. Euclid Chemical Company (The); Kurez DR VOX.
    - g. Kaufman Products, Inc.; Thinfilm 420.
    - h. Lambert Corporation; Aqua Kure-Clear.
    - i. L&M Construction Chemicals, Inc.; L&M Cure R.
    - j. Meadows, W. R., Inc.; 1100 Clear.
    - k. Nox-Crete Products Group, Kinsman Corporation; Resin Cure E.
    - l. Symons Corporation; Resi-Chem Clear.
    - m. Tamms Industries Inc.; Horncure WB 30.
    - n. Unitex; Hydro Cure 309.
    - o. Vexcon Chemicals, Inc.; Certi-Vex Enviocure 100.
- F. White Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B.
  - 1. Available Products:
    - a. Anti-Hydro International, Inc.; AH Curing Compound #2 WP WB.
    - b. Burke by Edoco; Resin Emulsion White.
    - c. ChemMasters; Safe-Cure 2000.
    - d. Conspec Marketing & Manufacturing Co., Inc.; W.B. Resin Cure.
    - e. Dayton Superior Corporation; Day-Chem White Pigmented Cure (J-10-W).
    - f. Euclid Chemical Company (The); Kurez VOX White Pigmented.
    - g. Kaufman Products, Inc.; Thinfilm 450.
    - h. Lambert Corporation; Aqua Kure-White.
    - i. L&M Construction Chemicals, Inc.; L&M Cure R-2.
    - j. Meadows, W. R., Inc.; 1200-White.
    - k. Symons Corporation; Resi-Chem White.
    - l. Tamms Industries, Inc.; Horncure 200-W.
    - m. Unitex; Hydro White.
    - n. Vexcon Chemicals, Inc.; Certi-Vex Enviocure White 100.

2.4 RELATED MATERIALS – SEE PROJECT PLANS

2.5 PAVEMENT MARKINGS

A. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with FS TT-P-1952, with drying time of less than 45 minutes.

1. Color: As required by local authorities.

2.6 CONCRETE MIXTURES – SEE PROJECT PLANS

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.

B. Proportion mixtures to provide normal-weight concrete with the following properties:

1. Compressive Strength (28 Days): **See Plans.**
2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.50.
3. Slump Limit: **5 inches**, plus or minus **1 inch**.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content: 5 percent plus or minus 1.5 percent for **1-1/2-inch** nominal maximum aggregate size.

D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 or 0.30 percent by weight of cement.

E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

F. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements as follows:

1. Fly Ash or Pozzolan: 25 percent.
2. Ground Granulated Blast-Furnace Slag: 50 percent.
3. Combined Fly Ash or Pozzolan, and Ground Granulated Blast-Furnace Slag: 50 percent, with fly ash or pozzolan not exceeding 25 percent.

2.7 CONCRETE MIXING – SEE PROJECT PLANS

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M and ASTM C 1116. Furnish batch certificates for each batch discharged and used in the Work.
  - 1. When air temperature is between 85 deg F and 90 deg F , reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F , reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.2 PREPARATION

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

3.3 EDGE FORMS AND SCREED CONSTRUCTION

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

3.4 JOINTS – SEE PROJECT PLANS

- A. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

### 3.5 CONCRETE PLACEMENT

- A. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- B. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
- C. Do not add water to concrete during delivery or at Project site.
- D. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- E. Consolidate concrete according to ACI 301 by hand spading, rodding, or tamping.
  - 1. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.
- F. Screed pavement surfaces with a straightedge and strike off.
- G. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- H. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  - 1. When air temperature has fallen to or is expected to fall below **40 deg F** , uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than **50 deg F** and not more than **80 deg F** at point of placement.
  - 2. Do not use frozen materials or materials containing ice or snow.
  - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mix designs.
- I. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
  - 1. Cool ingredients before mixing to maintain concrete temperature below **90 deg F** at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  - 2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.

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

### 3.6 FLOAT FINISHING

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

### 3.7 CONCRETE PROTECTION AND CURING

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

Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

### 3.8 PAVEMENT TOLERANCES

- A. Comply with tolerances of ACI 117 and as follows:

1. Elevation: **1/4 inch**.
2. Thickness: Plus **3/8 inch**, minus **1/4 inch**.
3. Surface: Gap below **10-foot**- long, unlevelled straightedge not to exceed **1/4 inch**.
4. Contraction Joint Depth: Plus **1/4 inch**, no minus.
5. Joint Width: Plus **1/8 inch**, no minus.

### 3.9 REPAIRS AND PROTECTION

- A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.
- B. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- C. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 03051



## SECTION 03223

### PAVEMENT MARKINGS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes painted markings applied to concrete pavement.

##### 1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

##### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified.

#### PART 2 - PRODUCTS

##### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Aexcel Inc.
2. Benjamin Moore & Co.
3. Color Wheel Paints & Coatings.
4. Columbia Paint & Coatings.
5. Conco Paints.
6. Coronado Paint; Division of INSL-X Products Corporation.
7. Diamond Vogel Paints.
8. Dunn-Edwards Corporation.
9. Ennis Traffic Safety Solutions, Inc.
10. Frazee Paint.
11. General Paint.
12. Kwal Paint.
13. M.A.B. Paints.

14. McCormick Paints.
15. Miller Paint.
16. Parker Paint Mfg. Co. Inc.
17. PPG Industries.
18. Pratt & Lambert.
19. Rodda Paint Co.
20. Rohm and Haas Company; a subsidiary of The Dow Chemical Company.
21. Scott Paint Company.
22. Sherwin-Williams Company (The).

## 2.2 PAVEMENT-MARKING PAINT

- A. Pavement-Marking Paint: Parking Space Indicator Lines.
  1. Color: White.
- B. Pavement-Marking Paint: Handicap Parking Space Indicator Lines.
  1. Color: Blue.

## PART 3 - EXECUTION

### 3.1 PAVEMENT MARKING

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.
- B. Allow paving to age for a minimum of 30 days before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).
  1. Apply graphic symbols and lettering with paint-resistant, die-cut stencils. Apply paint so that it cannot run beneath the stencil.

END OF SECTION 03223

## SECTION 03273

### PARKING BUMPERS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes wheel stops.

##### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified.

#### PART 2 - PRODUCTS

##### 2.1 PARKING BUMPERS

- A. Concrete Wheel Stops: Precast, steel-reinforced, air-entrained concrete, 4000-psi (27.6-MPa) minimum compressive strength, 4-1/2 inches (115 mm) high by 9 inches (225 mm) wide by 72 inches (1800 mm) long. Provide chamfered corners, transverse drainage slots on underside, and a minimum of two factory-formed or -drilled vertical holes through wheel stop for anchoring to substrate.
  - 1. Mounting Hardware: Galvanized-steel hardware as standard with wheel-stop manufacturer.
- B. Resilient Wheel Stops: Solid, integrally colored, 96 percent postconsumer or commingled postconsumer and preconsumer recycled rubber or plastic; UV stabilized; 4 inches (100 mm) high by 6 inches (150 mm) wide by 72 inches (1800 mm) long. Provide chamfered corners and a minimum of two factory-formed or -drilled vertical holes through wheel stop for anchoring to substrate.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
    - a. [Checkers Industrial Safety Products, Inc.](#)
    - b. [GNR Technologies.](#)
    - c. [Plastic Safety Systems, Inc.](#)

- d. [Scientific Developments, Inc.](#)
  - e. [Technoflex.](#)
  - f. [Traffic Logix.](#)
- 3. Color: Yellow.
  - 4. Embedded Markings: Molded-in, white reflective markings, permanently inset in exposed surface.
  - 5. Mounting Hardware: Galvanized-steel hardware as standard with wheel-stop manufacturer.
  - 6. Adhesive: As recommended by wheel-stop manufacturer for adhesion to pavement.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. General: Install wheel stops according to manufacturer's written instructions unless otherwise indicated.
- B. Install wheel stops in bed of adhesive before anchoring.
- C. Securely anchor wheel stops to pavement with hardware in each preformed vertical hole in wheel stop as recommended in writing by manufacturer.

END OF SECTION 03273

# ***DIVISION 4***

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## ELECTRICAL

DAMMON ENGINEERING, INC.  
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Dammonengineering.com





## SECTION 04510

### ELECTRICAL

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 GENERAL

- A. This Section covers the supply and installation of underground electrical conduit and wire.

##### 1.3 MATERIALS

- A. All materials shall be supplied by the Contractor in accordance with the Drawings.

##### 1.4 CONDUIT

- A. The Contractor shall supply the conduit with all necessary couplings and fittings. Rigid conduit for underground electrical installation shall be polyvinyl chloride pipe Schedule 80.

##### 1.5 CONSTRUCTION

- A. The conduit shall be installed by trench excavation method in accordance with the Drawings. Underground conduit shall normally be trench excavated except where underground conduit is designated to be placed under existing pavement or surfacing structure, in which case the conduit shall be installed by the pushed conduit method.

##### 1.6 TRENCH EXCAVATION

- A. A trench shall be excavated to the depth and grade required, and a base shall be formed to provide a firm foundation of uniform density throughout the length of the trench. The trench shall be no wider than necessary to permit satisfactory installation of the conduit and thorough compaction of the backfill material around the conduit. The excavation shall be performed in such a manner as to cause the least possible damage to the adjacent embankment surface and other improvements.

CITY OF SLIDELL PROJECT NO. 600-129  
CITY HALL PARKING LOT & COURTYARD  
BOUSCAREN STREET  
SLIDELL LA 70458

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END OF SECTION 04510

January 7, 2013

City of Slidell  
Engineering Department  
250 Bouscaren Street, Suite 302  
Slidell, Louisiana 70458

Attn: Ms. Donna O'Dell, P.E.  
City Engineer

Re: Geotechnical Engineering Report  
Proposed City Parking Lots  
Slidell, Louisiana  
Project No. G12-061

Dear Ms. O'Dell:

Stratum Engineering, LLC (SE) is pleased to submit our Geotechnical Engineering Report for the above referenced project. This report includes the results of the field exploration and laboratory testing, and recommendations for pavement design, as well as general site development for the proposed city parking lots located at multiple locations in downtown Slidell.

We appreciate the opportunity to perform this Geotechnical Study and look forward to continued participation during the design and construction phases of this project. If you have any questions pertaining to this report, or if we may be of further service, please contact our office.

Respectfully submitted,  
STRATUM ENGINEERING, LLC



William "Dean" McInnis, E.I.  
Project Manager

WDM/TYM:jkh



Tony Y. Maroun, P.E.  
Principal





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## **PROJECT INFORMATION**

### **Project Authorization**

Stratum Engineering, LLC (SE) has completed a geotechnical exploration for the proposed city parking lots located on the northwest and southeast corners of Erlanger Street and 4<sup>th</sup> Street, as well as Bouscaren Street in the downtown area of the City of Slidell. The exploration was accomplished in general accordance with SE Proposal No. G12-103, dated October 4, 2012.

### **Project Description**

We understand that the City plans to provide additional surface parking areas throughout the downtown area for the local government offices and other social events at the nearby Municipal Auditorium. In addition, the existing concrete parking lot behind City Hall will be expanded to encompass the grassy area adjacent to the existing parking lot.

Although traffic loading information has not been provided to us, the parking lots are expected to undergo light traffic loads consisting of passenger vehicles and light trucks. Considerations will be given to flexible and rigid pavements.

The geotechnical recommendations presented in this report are based on the available project information, parking lot locations, and the subsurface materials described in this report. If any of the noted information is incorrect, please inform SE in writing so that we may amend the recommendations presented in this report if appropriate and if desired by the client. SE will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

### **Purpose and Scope of Services**

The purpose of this study was to explore the subsurface conditions at multiple sites to enable an evaluation of a cost effective pavement systems for the proposed new parking lots. A total of seventeen (17) hand augered borings were advanced to a depth of 6 feet below the existing ground surface within the proposed parking lots. Our scope of services included a reconnaissance of the project sites, auguring the soil borings, select laboratory testing, and preparation of this geotechnical report. The report briefly outlines the testing procedures, presents available project information, describes the sites and subsurface conditions, and presents recommendations regarding the following:

- Flexible and rigid pavements;
- Site preparation, including subgrade preparation and fill compaction requirements;
- Factors influencing the construction and performance of the proposed improvements.

The scope of geotechnical services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, surface water, groundwater, or air on or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

## **SITE AND SUBSURFACE CONDITIONS**

### **Site Location and Description**

Three (3) separate locations are being considered for the new city parking lots. The sites are located within a three block radius of each other in the downtown area of Slidell. The sites are located on the northwest corner of Erlanger Street and 4<sup>th</sup> Street, the southeast corner of Erlanger Street and 4<sup>th</sup> Street and west of the existing City Hall Building on Bouscaren Street and 2<sup>nd</sup> Street.

A brief description of the proposed site locations is presented below:

#### **Northwest Corner of Erlanger Street and 4<sup>th</sup> Street**

The site encompasses about ½ acre of previously developed land on the northwest corner of Erlanger Street and 4<sup>th</sup> Street. The property was previously occupied by the single story Slidell Cultural Affairs building which has been demolished and removed from the site. The site appeared to have been graded and is currently covered with sparse surface vegetation with small trees and some concrete walkways around the perimeter. The area of the previous building appears to have been graded with tan silty topsoil which was wet and very soft at the time of the field investigation. An existing gazebo was noted to be on the western end of the property.

Detailed grading information was not available at the time the report was prepared; however, the site appears to vary in elevation from 1 to 2 feet across the site and near the adjacent street grade.

#### **Southeast Corner of Erlanger Street and 4<sup>th</sup> Street**

The site encompasses about ¼ acre of vacant land on the southeast corner of Erlanger Street and 4<sup>th</sup> Street. The property is currently covered with grass and a few sparse trees along the property perimeter. A drainage ditch runs along the west and north sides of the site along 4<sup>th</sup> Street and Erlanger Street, respectively.

The site appears to be relatively flat. Existing ground surface elevation appears to be slightly lower than the adjacent street centerline elevation.

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## West of Existing City Hall Building on 2<sup>nd</sup> Street and Bouscaren Street

The site encompasses an existing concrete parking area behind the existing City Hall Building which fronts 2<sup>nd</sup> Street. The parking area is accessed from Bouscaren Street on the south end, and is approximately 115 feet by 45 feet with 15 to 16 parking spaces. We understand consideration is being given to removing the existing parking lot and replacing it with a large lot encompassing the existing parking area and the adjacent vacant grassy area to the west of the existing pavement.

Preliminary topographic information provided for this site by Damon Engineering indicates that the existing pavement elevation ranges from about +7.5 feet at the north end to about +6.3 feet near Bouscaren Street. The area drains into existing storm drains located off the west edge of the pavement.

Although detailed grading information for the 3 sites was not available at the time this report was prepared, it was assumed that minimal amount of cut and fill, on the order of 12 to 18 inches, will be required to achieve the design grades.

### **Field Exploration and Laboratory Testing**

The field exploration, which was performed to evaluate the engineering characteristics of the subsurface materials, included a reconnaissance of the project site, auguring soil borings and recovering soil samples. The depth to groundwater when encountered in the test borings was also measured and recorded.

The project sites were characterized by hand augering seventeen (17) soil borings to a depth of six (6) feet below the existing ground surface. A summary of the boring schedule is tabulated below:

<b>Site Location</b>	<b>Boring Numbers</b>
Northwest corner of Erlanger Street and 4 <sup>th</sup> Street	P-1 through P-8
Southwest corner of Erlanger Street and 4 <sup>th</sup> Street	P-9 through P-13
Bouscaren Street near 2 <sup>nd</sup> Street	P-14 through P-17

The borings were located in the field using an aerial photo provided to us. The approximate locations of the borings are indicated on a site plan included in the Appendix of this report.

The laboratory testing program included supplementary visual classification and water content tests on all of the soil samples. In addition, selected samples were subjected to percent passing the #200 sieve and Atterberg Limits determination. The laboratory testing was performed in general accordance with ASTM Standard Procedures.

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## **Subsurface Conditions**

### **Northwest Corner of Erlanger Street and 4<sup>th</sup> Street**

Based on borings P-1 through P-8, about 6 to 12 inches of silty topsoil with organics was encountered at the surface. At some locations in the previous building area, the surface is covered with sand and shell fill. The surface material was followed by loose gray silt or soft tannish gray silty clay extending to a depth of 2 to 4 feet and followed by gray lean clay to a depth of six (6) feet, the maximum depth explored.

### **Southwest Corner of Erlanger Street and 4<sup>th</sup> Street**

Based on borings P-9 through P-13, the surface is covered with 6 to 10 inches of topsoil with organics or eight (8) to 12 inches of sand and gravel. The surface material is underlain by gray lean to silty clay extending to about 2 feet and followed by tannish gray lean clay to at least 6 feet.

### **Bouscaren Street Parking Area**

Based on borings P-14 through P-17, the surface is covered with 4 to 5 inches of concrete underlain by two (2) to 8 inches of sand and gravel mixture. The pavement and base materials were underlain by very soft to firm lean clay or sandy clay to a depth of at least 6 feet.

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the Appendix should be reviewed for specific information at the boring locations. These records include soil descriptions, stratification, locations of the samples, and laboratory test data. The stratification shown on the boring logs represent the conditions only at the actual boring locations. Variations may occur and should be expected between boring locations. The stratification represents the approximate boundary between subsurface materials and the actual transition may be gradual. Water level information obtained during field operations is also shown on the boring logs. The samples, which were not altered by laboratory testing, will be retained for 60 days from the date of this report and then will be discarded.

## **Groundwater Conditions**

Groundwater was not encountered in any of the parking lot borings upon completion of augering. However, it should be noted that groundwater levels will fluctuate with seasonal variations in rainfall and extended periods of drought as well as surface runoff. In addition, perched water may be encountered in isolated zones of the overburden material, particularly in the area of the previous building where loose soil was encountered.

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## **EVALUATION AND RECOMMENDATIONS**

### **General**

The performance of the pavement depends upon several factors including (1) the characteristics of the supporting soils; (2) the magnitude and frequency of wheel load applications; (3) the quality of construction materials; (4) the contractor's placement and workmanship abilities; and (5) the desired period of design life.

Varying soil conditions were encountered at the multiple locations explored. The subsurface soil at the undeveloped site located on the southwest corner of Erlanger Street and 4th Street were generally firm and stable. However, the subsurface soils at the previously developed site at the northwest corner of Erlanger Street and 4<sup>th</sup> Street were generally soft, particularly at the previous building location. Based on the borings, soft and wet silty clays were noted at the site and extended as deep as 4 to 5 feet. This may be due to the demolition of the building and removal of its foundation elements which were likely backfilled loosely with the existing materials allowing rain water to saturate the soil and cause the present soft conditions. Furthermore, unsuitable materials and remnants of the previous structure may be encountered at this location which warrants further investigation of the site with a few test pits to identify the presence of any unsuitable material prior to construction.

The subsurface soils below the paved parking lot at Bouscaren Street were noted to be soft and wet. At some locations, the soft conditions extended from 3 to 4 feet. Boring P-14 was relocated about 10 feet due to hand auger refusal caused by bricks or debris.

We understand that consideration is being given to rigid and flexible pavement systems for the parking lots. Details related to site preparation and pavement recommendations are presented in subsequent sections of this report.

### **Site Preparation**

Site preparation is expected to include, but not be limited to, stripping the topsoil and removal of any surface vegetation or other deleterious materials. The surface concrete at the Bouscaren site should be removed and hauled off the site. Utility lines in the area should be located and re-routed as necessary. Based on the borings, about 8 to 12 inches of silty topsoil with organics was encountered at most of the boring locations. However, the actual stripping depth should be determined by a representative of the Geotechnical Engineer at the time of construction.

At the northwest corner of Erlanger Street and 4<sup>th</sup> Street site, some undercutting should be anticipated, particularly at the previous building location. The undercutting could extend to 4 feet to remove the saturated soil and provide a stable subgrade prior to fill placement.

Based on the borings, soft material was also encountered below the paved area behind City Hall. The soft soil extended to about 3 feet. Furthermore, boring P-14 was relocated about 10 feet east of its original location to avoid hand auger refusal. Consequently, undercutting the soft material and removal of potential debris/unsuitable material should also be anticipated at this site location.

The exposed subgrade in the pavement areas should be proofrolled with a rubber tired vehicle weighing about 20 tons. Soils, which are observed to rut or deflect excessively under the moving load, should be undercut and replaced with properly compacted structural fill. The proofrolling and undercutting activities should be witnessed by a representative of the Geotechnical Engineer and should be performed during a period of dry weather.

After subgrade preparation and observation have been completed, the initial layer of fill should be placed in a relatively uniform horizontal lift and be adequately keyed into the stripped subgrade soils. Silty sand and clayey sand can be used as structural fill. The fill should have a maximum liquid limit of 35 and a maximum plasticity index of 18 percent. Granular fill, such as “pumped” river sand having less than 10 percent passing the #200 sieve, may also be used as structural fill to backfill deep cuts when extremely wet conditions are encountered.

The fill should be placed in maximum lifts of eight (8) inches of loose materials and should be compacted within three (3) percentage points of the optimum moisture content. If water must be added, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying. The fill should be compacted to at least 95 percent of the Standard Proctor maximum dry density as determined by ASTM D698. Adequate drainage should be provided during site work and after construction. The sites should be graded to promote rapid runoff.

### **Pavement Recommendations**

Detailed grading information was not available at the time this report was prepared. However, we assume that 12 to 18 inches of cut and fill will be required at the various sites to achieve the design grades. Although traffic information was not provided to us, typical traffic will likely consist of light passenger cars and pick up trucks. We understand that rigid and flexible pavements are being considered for the proposed parking lots.

The general pavement design information presented in this report is based on parameters published by AASHTO and the Portland Cement Association as well as past experience in the area. The pavement design was also based on the available field and laboratory test results obtained from the borings.

Our scope of services did not include extensive sampling for determination of Modulus of Subgrade Reaction (k) of the existing subgrade or potential sources of imported fill for the specific purpose of a detailed pavement analysis. Instead, we have assumed pavement related design parameters that are considered to be typical for the area soil types. For our analysis, a Modulus of Subgrade Reaction (k) of 100 psi/in was assumed for the compacted structural fill.

The recommended pavement sections presented are considered typical and minimum for the assumed parameters in the general site area and anticipated traffic condition. We understand that budgetary considerations sometimes warrant thinner pavement sections than those presented. However, the owner and the project designers should be aware that thinner pavement sections may result in increased maintenance costs and lower than anticipated pavement life. The pavement subgrade should be prepared as discussed in the Site Preparation section of this report.

Taking into consideration the expected traffic type and frequency, as well as the subsurface soil conditions, the recommended pavement sections for 20 year design life are as follows:

<b>FLEXIBLE PAVEMENT RECOMMENDED MINIMUM THICKNESS</b>	
<b>Pavement Materials</b>	<b>Light Duty Parking Area</b>
Asphaltic Concrete Wearing Course	1 1/2"
Asphaltic Concrete Binder Course	1 1/2"
Compacted Class II Base	8"
Compacted Structural Fill	12"

<b>RIGID PAVEMENT RECOMMENDED MINIMUM THICKNESS</b>	
<b>Pavement Materials</b>	<b>Light Duty Parking Area</b>
Portland Cement Concrete	6"
Compacted Granular Fill (Sand)	12" min.

Portland Cement Concrete pavements should be utilized where waste disposal containers are located. The concrete paved area should be sufficiently large so that the front wheels of the collection trucks are supported on the rigid pavement. In this area, and in areas which will be accessed by heavy trucks (solid waste trucks, delivery trucks), a minimum concrete pavement thickness of seven (7) inches underlain by 12 inches of compacted structural fill is recommended.

The Class II base may consist of 610 limestone or crushed concrete meeting the requirements of the latest edition of Louisiana Standard Specification for Roads and Bridges (LSSRB), Section 1003.3D. The sand base under the rigid pavement shall meet the embankment fill requirements of LSSRB, Section 1003.07. The base should be compacted to at least 95 percent of the maximum dry density determined by ASTM D698 (Standard Proctor) within 3 percent of optimum moisture content.

The asphaltic concrete should meet the requirements of the latest edition of LSSRB and should be compacted to a minimum of 95 percent of the density of the laboratory molded specimen.

Proper finishing of concrete pavement requires the use of appropriate construction joints to reduce the potential for cracking. Construction joints should be designed in accordance with current Portland Cement Association and American Concrete Institute guidelines. Joints should be sealed to reduce the potential for water infiltration into pavement joints and subsequent infiltration into the supporting soils. Load transfer devices at the pavement joints should be designed in accordance with accepted codes. The concrete should have a minimum compressive strength of 4,000 psi at 28 days. The concrete should also be designed with  $5 \pm 1$  percent entrained air to improve workability and durability.

## **Geotextile Fabric**

Should soft conditions be encountered, particularly at the northwest corner of Erlanger Street and 4<sup>th</sup> Street site, a woven geotextile consisting of MIRAFI 600X or equivalent is recommended to improve the subgrade condition prior to fill placement. The geotextile, which is sold in rolls of various sizes, should be installed per the manufacturer's recommendations and be overlapped a minimum of two (2) feet. The geotextile fabric should meet or exceed the following properties.

<b>Property</b>	<b>Test Method</b>	<b>Minimum Average Roll Values</b>
Grab tensile strength, lbs.	ASTM D4632	315
Grab tensile elongation, %	ASTM D4632	15
Mullen burst strength, psi	ASTM D4632	600
Puncture resistance, lbs.	ASTM D4632	120
Trapezoid tear strength, lbs.	ASTM D4632	120
UV resistance after 500 hrs, % strength resistance	ASTM D4632	70

## **CONSTRUCTION CONSIDERATIONS**

It is recommended that SE be retained to provide observation and testing of construction activities involved in the pavement and related activities of this project. SE cannot accept any responsibility for any conditions which deviate from those described in this report, nor for the performance of the pavement, if not engaged to also provide construction observation and testing for this project.

### **Moisture Sensitive Soils/Weather Related Concerns**

The upper soils encountered at this site are extremely sensitive to disturbances caused by construction traffic and changes in moisture content. During wet weather periods, an increase in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. In addition, soils that become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. It will, therefore, be advantageous to perform earthwork and pavement construction activities during dry weather.

### **Drainage and Groundwater Concerns**

Water should not be allowed to collect on the prepared subgrade in the pavement areas either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff. Positive site surface drainage should be provided to reduce infiltration of surface water into the subgrade soils.

Groundwater was not encountered during the drilling operations. However, it is possible that seasonal variations will cause fluctuations of the water table. Additionally, perched water may be encountered in discontinuous zones within the overburden, particularly at the previously developed site. Any water accumulation should be removed from the excavations by pumping. Should excessive and uncontrolled amounts of seepage occur, the Geotechnical Engineer should be consulted to provide additional recommendations, if necessary.

### **Excavations**

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, Part 1928, Subpart P". This document was issued to better ensure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, basement excavation or footing excavation, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR, Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

We are providing this information solely as a service to our client. SE does not assume responsibility for construction site safety or the contractor's or other parties' compliance with local, state, and federal safety or other regulations.

### **REPORT LIMITATIONS**

The recommendations submitted in this report are based on the available subsurface information obtained by SE and preliminary project information furnished by the City of Slidell and Damon Engineering. If there are any revisions to the plans for this project, or if deviations from the subsurface conditions noted in this report are encountered during construction, SE should be notified immediately to determine if changes in the pavement recommendations are required. If SE is not notified of such changes, SE will not be responsible for the impact of those changes on the pavement.

The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

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After the plans and specifications are more complete, the Geotechnical Engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated in to the design documents. At that time, it may be necessary to submit supplementary recommendations. If SE is not retained to perform these functions, SE will not be responsible for the impact of those conditions on the project. This report has been prepared for the exclusive use of the City of Slidell for the specific application to the proposed new parking lots to be constructed on Erlanger Street and 4<sup>th</sup> Street as well as Bouscaren Street in Slidell, Louisiana.

APPENDIX









⊕ = BORING LOCATION



**BORING LOCATION PLAN**

GEOTECHNICAL ENGINEERING SERVICES  
 PROPOSED CITY PARKING LOTS  
 ERLANGER STREET AND BOUSCAREN STREET  
 SLIDELL, LOUISIANA





**LOG OF BORING P-1**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

TYPE OF BORING: HAND AUGER      LOCATION: N.W. CORNER OF ERLANGER STREET AND 4TH STREET      PROJECT NO.: G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENTROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE	
	[Hatched Pattern]	[Checkered Pattern]	6" Topsoil with organics						15	20	4	73	
			Soft light gray Silty Clay with sand							16			
5			Tannish gray Lean Clay							18			
			Boring terminated at 6 feet										
10													
15													
20													
25													
30													
35													
40													
45													
50													

DEPTH OF BORING: 6 Feet      GROUNDWATER: Dry Upon Completion  
 DATE: 12/7/2012



**LOG OF BORING P-2**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

**TYPE OF BORING:** HAND AUGER      **LOCATION:** N.W. CORNER OF ERLANGER STREET AND 4TH STREET      **PROJECT NO.:** G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENETROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			12" Topsoil with organics						14	21	2	84
			Loose gray Silt with sand									
			Firm gray Silty Sandy Clay						17			
5									18			
			Boring terminated at 6 feet									
10												
15												
20												
25												
30												
35												
40												
45												
50												

**DEPTH OF BORING:** 6 Feet  
**DATE:** 12/7/2012

**GROUNDWATER:** Dry Upon Completion



**LOG OF BORING P-3**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

TYPE OF BORING: HAND AUGER      LOCATION: N.W. CORNER OF ERLANGER STREET AND 4TH STREET      PROJECT NO.: G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENETROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			10" Sand and gravel with shell mixture						16			
			Tan Sand - Fill									
			Very soft dark gray Silty to Lean Clay						21	23	8	94
5									23			
			Boring terminated at 6 feet									
10												
15												
20												
25												
30												
35												
40												
45												
50												

DEPTH OF BORING: 6 Feet  
 DATE: 12/7/2012

GROUNDWATER: Dry Upon Completion



**LOG OF BORING P-4**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

TYPE OF BORING: HAND AUGER      LOCATION: N.W. CORNER OF ERLANGER STREET AND 4TH STREET      PROJECT NO.: G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENTROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE	
			6" Sand - Fill						18				
			Soft tannish gray Silty Clay with sand and gravel										
			Soft tannish gray Lean to Silty Clay							21	23	8	87
5			- becomes firm at 4 feet						22				
			Boring terminated at 6 feet										
10													
15													
20													
25													
30													
35													
40													
45													
50													

DEPTH OF BORING: 6 Feet      GROUNDWATER: Dry Upon Completion  
 DATE: 12/7/2012



**LOG OF BORING P-5**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

**TYPE OF BORING:** HAND AUGER      **LOCATION:** N.W. CORNER OF ERLANGER STREET AND 4TH STREET      **PROJECT NO.:** G12-061

DEPTH, FT.	SOIL TYPE SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENTROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
		Sand and gravel mixture - Fill						14			
		Very loose gray Silt with trace of sand						21	20	2	94
5		Firm gray Lean Clay						23			
		Boring terminated at 6 feet									
10											
15											
20											
25											
30											
35											
40											
45											
50											

**DEPTH OF BORING:** 6 Feet  
**DATE:** 12/7/2012

**GROUNDWATER:** Dry Upon Completion



**LOG OF BORING P-6**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

**TYPE OF BORING:** HAND AUGER      **LOCATION:** N.W. CORNER OF ERLANGER STREET AND 4TH STREET      **PROJECT NO.:** G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENETROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
	[Diagonal Hatching]	[Checkerboard]	10" topsoil with organics						12			
			Gray Lean Clay with sand						13	35	18	84
5			- becomes tannish gray lean clay at 4 feet							18		
			Boring terminated at 6 feet									
10												
15												
20												
25												
30												
35												
40												
45												
50												

**DEPTH OF BORING:** 6 Feet  
**DATE:** 12/7/2012

**GROUNDWATER:** Dry Upon Completion



**LOG OF BORING P-7**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

**TYPE OF BORING:** HAND AUGER      **LOCATION:** N.W. CORNER OF ERLANGER STREET AND 4TH STREET      **PROJECT NO.:** G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENETROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			8" Gray Sandy topsoil with organics						8			
			Tan Silty Sand									
			Gray Lean Clay						15			
5									12	39	16	86
			Boring terminated at 6 feet									
10												
15												
20												
25												
30												
35												
40												
45												
50												

**DEPTH OF BORING:** 6 Feet  
**DATE:** 12/7/2012

**GROUNDWATER:** Dry Upon Completion



**LOG OF BORING P-8**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

**TYPE OF BORING:** HAND AUGER      **LOCATION:** N.W. CORNER OF ERLANGER STREET AND 4TH STREET      **PROJECT NO.:** G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENETROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE	
	[Hatched Pattern]	[Checkered Pattern]	8" Topsoil with organics						10	22	4	92	
			Soft gray Silty Clay with roots										
			Gray and tan Lean Clay							13			
5									19				
			Boring terminated at 6 feet										
10													
15													
20													
25													
30													
35													
40													
45													
50													

**DEPTH OF BORING:** 6 Feet      **GROUNDWATER:** Dry Upon Completion  
**DATE:** 12/7/2012



**LOG OF BORING P-9**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

**TYPE OF BORING:** HAND AUGER      **LOCATION:** S.W. CORNER OF ERLANGER STREET AND 4TH STREET      **PROJECT NO.:** G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENETROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
	[Diagonal Hatching]	[Checkerboard Pattern]	10" Topsoil with organics						20	29	11	94
			Light gray Lean Clay with trace of sand						21			
5												
			Boring terminated at 6 feet									
10												
15												
20												
25												
30												
35												
40												
45												
50												

**DEPTH OF BORING:** 6 Feet  
**DATE:** 12/7/2012

**GROUNDWATER:** Dry Upon Completion



**LOG OF BORING P-10**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

TYPE OF BORING: HAND AUGER      LOCATION: S.W. CORNER OF ERLANGER STREET AND 4TH STREET      PROJECT NO.: G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENTROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
	[Diagonal Hatching]	[Checkerboard]	8" Sand						12	31	13	91
			Gray Lean Clay with trace of sand							18		
5	[Diagonal Hatching]	[Checkerboard]	Tannish gray Lean to Fat Clay						22			
			Boring terminated at 6 feet									
10												
15												
20												
25												
30												
35												
40												
45												
50												

DEPTH OF BORING: 6 Feet      GROUNDWATER: Dry Upon Completion  
 DATE: 12/8/2012



**LOG OF BORING P-11**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

**TYPE OF BORING:** HAND AUGER      **LOCATION:** S.W. CORNER OF ERLANGER STREET AND 4TH STREET      **PROJECT NO.:** G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENETROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE	
	[Diagonal Hatching]	[Checkerboard]	6" of Topsoil with organics						22	35	18	95	
			Firm gray Lean Clay							24			
5			- becomes tannish gray at 2 feet								25		
			Boring terminated at 6 feet										
10													
15													
20													
25													
30													
35													
40													
45													
50													

**DEPTH OF BORING:** 6 Feet      **GROUNDWATER:** Dry Upon Completion  
**DATE:** 12/8/2012



**LOG OF BORING P-12**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

TYPE OF BORING: HAND AUGER      LOCATION: S.W. CORNER OF ERLANGER STREET AND 4TH STREET      PROJECT NO.: G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENTROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
	[Diagonal Hatching]	[Checkerboard Pattern]	8" Sandy topsoil with organics						16	29	12	95
			Gray Lean Clay with trace of sand						21			
5			- becomes tannish gray at 2 feet						22			
			Boring terminated at 6 feet									
10												
15												
20												
25												
30												
35												
40												
45												
50												

DEPTH OF BORING: 6 Feet      GROUNDWATER: Dry Upon Completion  
 DATE: 12/8/2012



**LOG OF BORING P-13**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

**TYPE OF BORING:** HAND AUGER      **LOCATION:** S.W. CORNER OF ERLANGER STREET AND 4TH STREET      **PROJECT NO.:** G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENETROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
	[Diagonal Hatching]	[Checkerboard]	12" Sand with gravel mix						25	37	16	80
			Gray Lean Clay with sand						21			
5			- becomes tannish gray at 2 feet						28			
			Boring terminated at 6 feet									
10												
15												
20												
25												
30												
35												
40												
45												
50												

**DEPTH OF BORING:** 6 Feet      **GROUNDWATER:** Dry Upon Completion  
**DATE:** 12/8/2012



**LOG OF BORING P-14**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

TYPE OF BORING: HAND AUGER

LOCATION: BOUSCAREN STREET PARKING

PROJECT NO.: G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENETROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE	
	[Pattern]	[Pattern]	4 1/4" Concrete, 8" Sand/Gravel Mix						25				
			Very soft tan and gray Sandy Lean Clay							26	30	15	66
5			Firm tannish gray Lean Clay							22			
			Boring terminated at 6 feet										
10													
15													
20													
25													
30													
35													
40													
45													
50													

DEPTH OF BORING: 6 Feet  
 DATE: 12/8/2012

GROUNDWATER: Dry Upon Completion



**LOG OF BORING P-15**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

TYPE OF BORING: HAND AUGER

LOCATION: BOUSCAREN STREET PARKING

PROJECT NO.: G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENETROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			5" Concrete, 4" Sand/Gravel Mix						18			61
			Tannish gray Silty Sandy Clay									
			Very soft tannish Lean Clay						23			
5			- becomes firm at 3 feet						25			
			Boring terminated at 6 feet									
10												
15												
20												
25												
30												
35												
40												
45												
50												

DEPTH OF BORING: 6 Feet  
 DATE: 12/8/2012

GROUNDWATER: Dry Upon Completion



**LOG OF BORING P-16**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

TYPE OF BORING: HAND AUGER

LOCATION: BOUSCAREN STREET PARKING

PROJECT NO.: G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENETROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			4" Concrete, 4" Sand/Gravel Mix						18	23	7	66
			Tannish gray Silty Sandy Clay									
			Firm olive green Lean Clay						22			
5			- becomes orange gray at 3 feet						24			
			Boring terminated at 6 feet									
10												
15												
20												
25												
30												
35												
40												
45												
50												

DEPTH OF BORING: 6 Feet  
 DATE: 12/8/2012

GROUNDWATER: Dry Upon Completion



**LOG OF BORING P-17**  
**PROPOSED CITY PARKING LOTS**  
**ERLANGER STREET AND BOUSCAREN STREET**  
**SLIDELL, LOUISIANA**

TYPE OF BORING: HAND AUGER

LOCATION: BOUSCAREN STREET PARKING

PROJECT NO.: G12-061

DEPTH, FT.	SOIL TYPE	SAMPLES	DESCRIPTION	N-BLOWS/FT.	UNCONFINED COMPRESSIVE STRENGTH tsf	HAND PENETROMETER tsf	TORVANE tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			5" Concrete, 2" Sand/Gravel Mix						20	17	1	69
			Gray Sandy Silt with shell fragments									
			Soft gray Lean Clay						25			
5			- becomes firm tan and gray lean clay, 4 feet to 6 feet						22			
			Boring terminated at 6 feet									
10												
15												
20												
25												
30												
35												
40												
45												
50												

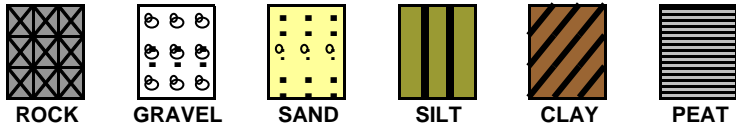
DEPTH OF BORING: 6 Feet  
 DATE: 12/8/2012

GROUNDWATER: Dry Upon Completion



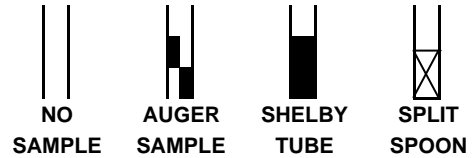
## KEY TO TERMS AND SYMBOLS USED ON LOGS

### SOIL TYPE



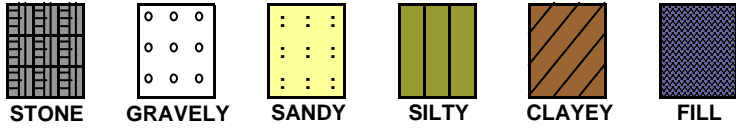
ROCK      GRAVEL      SAND      SILT      CLAY      PEAT

### SAMPLER TYPE

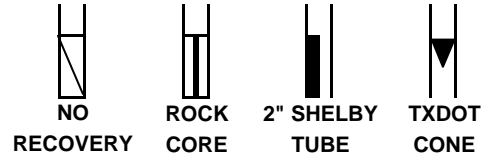


NO SAMPLE      AUGER SAMPLE      SHELBY TUBE      SPLIT SPOON

### MODIFIERS



STONE      GRAVELY      SANDY      SILTY      CLAYEY      FILL



NO RECOVERY      ROCK CORE      2" SHELBY TUBE      TXDOT CONE

### UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D 2487 (1980)

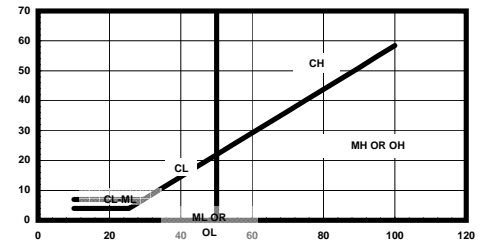
MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS	
COARSE GRAINED SOILS	GRAVEL & GRAVELLY SOILS	CLEAN GRAVEL (LITTLE OR NO FINES)	<b>GW</b>	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES	
		LESS THAN 50% PASSING NO. 4 SIEVE	<b>GP</b>	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES	
	50% PASSING NO. 4 SIEVE	W/ APPRECIABLE FINES	CLEAN SANDS (LITTLE FINES)	<b>GM</b>	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURES
			SANDS WITH APPRECIABLE FINES	<b>GC</b>	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	50% PASSING NO. 200 SIEVE	SANDS WITH LITTLE FINES	CLEAN SANDS (LITTLE FINES)	<b>SW</b>	WELL GRADED SAND, GRAVELY SAND (LITTLE FINES)
			SANDS WITH LITTLE FINES	<b>SP</b>	POORLY GRADED SANDS, GRAVELY SAND (L-FINES)
	50% PASSING NO. 200 SIEVE	SANDS WITH APPRECIABLE FINES	SANDS WITH APPRECIABLE FINES	<b>SM</b>	SILTY SANDS, SAND-SILT MIXTURES
			SANDS WITH APPRECIABLE FINES	<b>SC</b>	CLAYEY SANDS, SAND-CLAY MIXTURES
	FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50	<b>ML</b>	INORGANIC SILTS & VERY FINE SANDS, ROCK FLOUR SILTY OR CLAYEY FINE SANDS OR CLAYEY SILT W/ LOW PI
			LIQUID LIMIT LESS THAN 50	<b>CL</b>	INORGANIC CLAY OF LOW TO MEDIUM PI LEAN CLAY GRAVELY CLAYS, SANDY CLAYS, SILTY CLAYS
LIQUID LIMIT LESS THAN 50			<b>OL</b>	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PI	
50% PASSING NO. 200 SIEVE		SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50	<b>MH</b>	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
	LIQUID LIMIT GREATER THAN 50		<b>CH</b>	INORGANIC CLAYS OF HIGH PLASTICITY FAT CLAYS	
	LIQUID LIMIT GREATER THAN 50		<b>OH</b>	ORGANIC CLAYS OF MED TO HIGH PI, ORGANIC SILT	
HIGHLY ORGANIC SOIL			<b>PT</b>	PEAT AND OTHER HIGHLY ORGANIC SOILS	
UNCLASSIFIED FILL MATERIALS				ARTIFICIALLY DEPOSITED AND OTHER UNCLASSIFIED SOILS AND MAN-MADE SOIL MIXTURES	

### CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	SHEAR STRENGTH IN TONS/FT <sup>2</sup>
VERY SOFT	0. TO 0.125
SOFT	0.125 TO 0.25
FIRM	0.25 TO 0.5
STIFF	0.5 TO 1.0
VERY STIFF	1.0 TO 2.0
HARD	> 2.0 OR 2.0+

### RELATIVE DENSITY - GRANULAR SOILS

CONSISTENCY	N-VALUE (BLOWS/FOOT)
VERY LOOSE	0-4
LOOSE	4-9
MEDIUM DENSE	10-29
DENSE	30-49
VERY DENSE	> 50 OR 50+



### ABBREVIATIONS

- HP - HAND PENETROMETER      UC - UNCONFINED COMPRESSION TEST
- TV - TORVANE      UU - UNCONSOLIDATED UNDRAINED TRIAXIAL
- MV - MINIATURE VANE      CU - CONSOLIDATED UNDRAINED

NOTE: PLOT INDICATES SHEAR STRENGTH AS OBTAINED BY ABOVE TESTS



### CLASSIFICATION OF GRANULAR SOILS

#### U.S. STANDARD SIEVE SIZE(S)

	6"	3"	3/4"	4	10	40	200		
BOUL- -DERS	COBBLES	GRAVEL		SAND			SILT OR CLAY	CLAY	
		COARSE	FINE	COARSE	MEDIUM	FINE			
	152	76.2	19.1	4.76	2.0	0.42	0.074		0.002
GRAIN SIZE IN MM									