

ISSUED TO _____

DATE _____

**SEWERAGE and WATER BOARD
of
NEW ORLEANS**

SPECIFICATIONS

FOR

CONTRACT 8129

**Katrina Related Repairs to Garage #2 at Central
Yard**

Proposals to be Opened

11:00 a.m., Friday, September 19, 2014

GENERAL AND SPECIAL SPECIFICATIONS

FOR CONTRACT NO. 8129

KATRINA RELATED REPAIRS TO GARAGE 2 at CENTRAL YARD

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**CONTRACT AND BOND
BETWEEN**

.....
.....
.....

AND

**THE SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

UNITED STATES OF AMERICA,
STATE OF LOUISIANA,
PARISH OF ORLEANS,
CITY OF NEW ORLEANS

BE IT KNOWN

That on this day of the month of in
the year of our Lord, two thousand and, before
me,..... a Notary Public in and for the Parish of Orleans, State of
Louisiana, duly qualified and commissioned, and Official Notary for the Sewerage and Water
Board of New Orleans, and in the presence of the witnesses hereinafter named and
undersigned,

PERSONALLY CAME AND APPEARED:

1.The honorable.....
..... of the Sewerage and Water Board of New Orleans,
created by Act No. 6 of the Extra Session of 1899 by Legislature of the State of Louisiana, party
of the first part.

2.....
....., of lawful
age, resident of....., and hereinafter designated as
"Contractor", and party of the second part,

Which said appearers declared:

That the said
.....

Contractor, has agreed and do by these presents agree for the consideration
mentioned and contained herein, to furnish at own proper cost and
expense all the necessary labor and equipment and all materials (except those specifically
designated as to be furnished by the Sewerage and Water Board) and to do all the work of
every kind required under this contract, complete and in the manner, within the time and under
the conditions herein specified in strict accordance with the Information for Bidders and the
Plans and the Specifications, both General and Special, hereto annexed and made part of this
contract as fully as, if written at length, herein and paraphed for identification with this contract

by me, Notary, which Plans and Specifications are intended to govern the said work without any extra charge whatsoever.

A copy of the proposal of said Contractor filed with the Sewerage and Water Board on the..... day of, 20, and marked "Proposal", is annexed to and made part of this contract, all of which are hereby identified by me, Notary.

And in consideration of the faithful and complete performance by the Contractor of all and singular the obligations by, herein assumed, the Honorable on behalf of the Sewerage and Water Board, hereby agrees to pay unto said Contractor, his heirs, legal representatives and assigns, at the times and in the manner set forth in the specifications above referred to, the prices for the work to be done under this contract in accordance with the proposal of said Contractor as accepted by resolution of said Sewerage and Water Board on the day of, 20

And now to these presents intervened herein appearing by and through its Attorney-in-fact, who, acknowledging to have taken cognizance of the foregoing, hereby consents to the terms and conditions thereof and firmly and truly binds itself, its legal successors, representatives, and assigns, as surety, together with..... as principal, unto the Sewerage and Water Board of New Orleans, its legal successors, representatives and assigns in the full sum offor the true and faithful performance of said contract, and the payment of all sub-contractors, journeymen, cartmen, truckmen, workmen, laborers, mechanics, and furnishers of material, for which payment well and truly to be made to said Sewerage and Water Board, its legal successors, representatives and assigns theits successors and representatives are hereby fully bound.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, That if the above bounden Principal shall faithfully perform said contract according to its terms, covenants and conditions, and if the Principal and all subcontractors of the Principal shall pay for all work done, labor performed, or material furnished in the performance of said contract and shall pay for all material or supplies furnished for use in machines used in the performance of said contract, and shall deliver all said work to said Sewerage and Water Board free from all claims, liens, and expenses, then this obligation shall be null and void: otherwise to remain in full force and effect.

No modification, omission, addition in or to the terms of said contract, in the plans or specifications, or in the manner and mode of payment, shall in any manner affect the obligation of the Surety hereunder. It is expressly understood and agreed by and between the parties to this bond that the same is given in accordance with R. S. 38:2241 through 38:2248, of the Louisiana Revised Statutes of 1950, as amended.

Moreover,..... party of the second part, and..... his surety, do, by act of signing this Contract and Bond, consent and yield to the jurisdiction of the Civil District Court of the

Parish of Orleans of the State of Louisiana and do formally waive any plea of lack of jurisdiction, on account of their residence elsewhere in the event of suit under this Contract or Bond.

Thus done and passed and signed and delivered in my office at New Orleans the aforesaid day, month and year first written, in the presence of.....and

.....witnesses, both of lawful age and domiciled in this City, who hereunto sign these presents, together with the parties and me, Notary, after the reading of the whole.

SEWERAGE AND WATER BOARD OF NEW ORLEANS
BY:

.....
.....
.....
.....
.....
.....

WITNESSES:

.....
.....

.....
NOTARY PUBLIC

The foregoing contract is approved as to form.
New Orleans, La,

....., 20.....

.....

SPECIAL COUNSEL
SEWERAGE AND WATER BOARD OF NEW ORLEANS

GENERAL SPECIFICATIONS

SECTION A

INFORMATION FOR BIDDERS AND GENERAL PROVISIONS

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INFORMATION FOR BIDDERS

FORM OF PROPOSALS

(1) All proposals must be made upon the Form of Proposal embodied in the Special Specifications for each contract. A cashier's check, a certified check, U. S. currency or a bid bond acceptable to the Sewerage and Water Board must be enclosed with each proposal and no proposal will be considered which does not comply with this requirement. Said bid bond shall be written in the same name of the party, firm or corporation offering the proposal. The amount of this deposit or bid bond shall be five per cent (5%) of the total amount of the proposal.

(2) Each proposal shall contain the full name and address of each person interested therein if made by an individual, a firm or a co-partnership; if made by a corporation it must be signed in the name of the corporation by some duly authorized officer or agent thereof who shall also subscribe his own name and office. If possible, the seal of the corporation shall be affixed. All prices must be written in full in words and also in figures; if there is a difference between the words and the figures in any price bid, the price written in words will be considered to be the true bid. No proposal will be considered unless prices are given for all items for which prices are asked, except when specifically provided otherwise in the special specifications.

PROPOSALS

(3) Proposal from any person, firm or corporation in default upon any contract with the Sewerage and Water Board will neither be received nor considered. Any proposal which does not fully comply with all of the provisions of the "Information for Bidders" and of the specifications will be considered informal and may be rejected.

(4) Permission will not be given to withdraw, alter or add to any proposal after the final time set for the receipt of sealed proposals.

(5) If two or more proposals are received, equal in amount and lower than any other proposal, the Board reserves the right to evaluate these proposals, item by item, and to decide which proposal will be accepted. Unless otherwise specified, the contract will be let as a whole to one bidder. Preference will be given to home contractors, all conditions being equal.

(6) Not Used

DEPOSITS OR BID BONDS

(7) The deposits or bid bonds called for in paragraph No. 1, above, will be retained by the Sewerage and Water Board as the property of the bidders until the contract is awarded or all proposals are rejected. Upon the award of the contract, the deposits or bid bonds of all bidders, other than the lowest two (2) formal bidders will be returned. The return of the deposit or bid bond of the bidder to whom the contract is awarded is conditioned upon the successful bidder furnishing the insurance required in the specifications and his appearing before the Notary for the Sewerage and Water Board of New Orleans within ten (10) consecutive calendar days after notice by the Executive Director or the director of Administrative Services of the award of the contract and executing a contract and furnishing bond for the faithful fulfillment thereof according to the attached specifications. The deposit or bid bond of the next lowest bidder will be returned as soon as the successful bidder has executed his contract and furnished Bond. If all proposals are rejected, all deposits and bid bonds will be returned immediately.

BOND

(8) The said Bond for faithful fulfillment of the contract shall be for the full amount of the contract; it shall be executed by a surety company legally authorized to do business in the State of Louisiana, satisfactory to the Sewerage and Water Board. Should the bidder to whom the contract is awarded fail to appear within the specified period and execute the aforesaid Contract and Bond as herein set forth, his deposit or bid bond shall be forfeited and shall become the property of the Sewerage and Water Board as liquidated damages, and the said bidder shall cease to have any further rights to or in the contract. The Sewerage and Water Board may then proceed to advertise for new bids or to award the contract to the next-lowest bidder.

SIGNING OF CONTRACT AND BOND

(9) The Contract and Bond shall be signed in the City of New Orleans, before the Notary for the Sewerage and Water Board of New Orleans, by the Contractor in person or by a duly authorized representative. The notarial fee for the execution of the contract shall be paid by the Contractor in accordance with the Notarial Fee Schedule attached to these specifications. Contractor shall also be responsible for payment of all recordation costs.

QUANTITIES IN PROPOSAL

(10) Where the quantities given in the Form of Proposal, though determined with as much accuracy as deemed necessary, are approximate only, these quantities, however, at the price bid for each item, shall determine the relative value of each proposal. The quantity of each individual item is not a binding feature of the bid or of the contract, however, the Sewerage and Water Board does not, either expressly or by implication, agree that the actual amount of work to be done will correspond to the quantities given in the Form of Proposal. Bidders must bear this in mind and should check the quantities by examination of the drawings, the contract requirements and the actual conditions at the site of the work. Unbalanced bids may be rejected.

BIDDER TO EXAMINE LOCATION

(11) Each bidder must thoroughly examine the location of the contract work and satisfy himself as to the surrounding conditions, the nature of the soil and the obstructions therein and all other difficulties to be overcome and must judge for himself the character of the work to be performed; the Sewerage and Water Board will in no way be responsible for any errors, oversights or misjudgment of the bidder, nor will the Board make any allowance therefore. The Sewerage and Water Board is not to be held responsible for any oral information by any officer or employee of the Board concerning the nature of the soil strata or the obstacles to be encountered.

INTERPRETATIONS OF SPECIFICATIONS

(12) If any person contemplating submitting a proposal for a contract is in doubt as to the true meaning of any part of plans, specifications or other proposed contract documents, he may submit to the Purchasing Agent of the Sewerage and Water Board a written request for an interpretation thereof; the said request must be delivered at the office of the Purchasing Agent of the Board not less than seven (7) working days before the time set for the opening of the proposals, and the person submitting the request shall be responsible for its prompt delivery. Any interpretation of the proposed documents will be made only by Addendum, duly issued, and a copy of such Addendum will be mailed or delivered to each person receiving a set of such documents. The Sewerage and Water Board will not be responsible for any other explanation or interpretation of the proposed documents.

LABOR REGULATIONS

(13) All work carried out under this contract shall comply with all laws, ordinances, regulations, etc., of the State of Louisiana and the City of New Orleans, relative to licenses, permits, approvals, etc., required by law or ordinarily secured under recognized good practice, which said licenses, permits, approvals, etc., shall be secured by the Contractor at his own expense.

(14) Not Used

(15) Not Used

INSURANCE

(16) The Contractor shall maintain, at his own cost and expense, such insurance as will protect him from all claims for damages to public or private property or for personal injury, including death, to employees or to the public, which may arise from any operations under this contract or any of its subcontracts. The following are the types of insurance policies and the minimum limits of insurance coverage which shall be maintained by the Contractor during the entire term of the contract:

(a) WORKMEN'S COMPENSATION INSURANCE, as will protect him from claims under Workmen's Compensation Acts. The limit of liability under the Employers' Liability Section of the policy shall be in the amount of \$100,000. Whenever any vessel or floating equipment is involved, the insurance shall afford coverage under Federal Longshoremen's and Harbor Workers' Act, and shall also include protection for injuries and/or death to Masters and Members of the crews of vessels (Jones Act), with limits of \$100,000 each person and \$500,000 each accident.

(b) COMPREHENSIVE GENERAL LIABILITY INSURANCE, with limits of liability for bodily injury and/or death of not less than \$500,000 for all injuries and/or deaths arising out of any one occurrence. The limits of liability for property damage shall not be less than \$100,000 for each occurrence and not less than \$500,000 aggregate, including Explosion, Collapse, and Underground Property Damage Hazards.

(c) OWNER'S PROTECTIVE LIABILITY INSURANCE, in the name of the Sewerage and Water Board of New Orleans and the City of New Orleans, as Named Insureds. The limits of liability shall be the same as specified in Paragraph (b) above, and shall include Explosion, Collapse and Underground Property Damage Hazards. Subcontractors need not provide the insurance required by this Paragraph (c).

(d) COMPREHENSIVE AUTOMOBILE LIABILITY INSURANCE, which shall include Hired Cars and Non-Ownership Coverage. The limits of liability for bodily injury and/or death shall not be less than \$100,000 for any one person and not less than \$500,000 for all injuries and/or death resulting from any one occurrence. The limit of liability for property damage shall not be less than \$100,000 for each occurrence.

(e) PROPERTY INSURANCE, required on all work except sewer and water drainage pipelines, reinforced concrete canals, work completely underground, and similar work (however Contractor is not relieved of responsibility therefore).

1. BUILDERS RISK INSURANCE (covering Fire, Extended Coverage, Vandalism and Malicious Mischief) will be carried on a completed value or reporting form, for not less than 100% of the value of the work, including foundations.
2. In addition, INSTALLATION FLOATER INSURANCE (on an "All Risks" form) will be carried on all machinery and equipment to be installed, whether furnished by the Sewerage and Water Board or by Contractor, for not less than 100% of the installed value of the machinery and equipment. This insurance shall be written in the same Insurance Company carrying the Builder's Risk Insurance (where possible), shall include testing, and shall terminate only when installation has been accepted by the Sewerage and Water Board.

(NOTE: "ALL RISKS" Builder's Risk Insurance will be acceptable in lieu of Builder's Risk and Installation Floater Insurance, and must meet the requirements of the Property Insurance above). The Builder's Risk and Installation Floater Policies required above shall include the names of the Sewerage and Water Board of New Orleans, and the City of New Orleans, and will cover the interests of all sub-contractors without specifically naming them. If the insurance is written subject to a deductible clause, Contractor assumes responsibility for the amount of the deductible.

The furnishing of insurance as provided above shall not relieve the Contractor of his responsibility for losses not covered by insurance. Prior to the signing of the contract, evidence of all such applicable insurance satisfactory to the Board shall be filed with the Executive Director of the Sewerage and Water Board. All policies shall be in insurance companies authorized to do business in Louisiana and shall remain in full force and effect until the final completion of the work and acceptance thereof by the authority of the Board. The Contractor and/or his insurer shall notify the Executive Director of the Sewerage and Water Board at least thirty (30) days in advance of any insurance coverage to be cancelled or of any insurance coverage that will expire. The Contractor shall then simultaneously furnish the Board evidence of new coverage to be effective the same day and hour of the expired or cancelled coverage. In the event the Contractor fails to submit this evidence of new coverage five (5) days prior to cancellation date or expiration date of any policy or policies, the Sewerage and Water Board will obtain the required coverage to become effective on date of cancellation or expiration of said policies. The cost of such new coverage shall be at the expense of the Contractor and any expenditures incurred by the Board for this coverage will be deducted from any balance due to the Contractor. Should the Board be unable to secure new coverage to take the place of the expired or cancelled policy or policies, a "stop work" order will be issued and all work on the contract shall cease on the same date and hour as the coverage ceases. Should the Contractor fail or refuse to secure coverage within five (5) days after the date of the "stop work" order, then in such case the Contractor shall be declared to be in default, and the contract between the parties shall be considered cancelled and of no force or effect between the parties reserving all rights of the Board against the Contractor and his surety.

LIENS

(17) The Contractor shall furnish the Sewerage and Water Board with satisfactory evidence that all persons who have done work or furnished materials under this Contract and are entitled to a lien therefore under any law of the State of Louisiana, have been fully paid or are no longer entitled to such a lien, and in case such evidence is not furnished, as aforesaid, such amounts as the Sewerage and Water Board may consider necessary to meet the lawful claims of the persons aforesaid, shall be retained from the money due the Contractor under this Contract, until the aforesaid liabilities have been fully discharged and the evidence thereof furnished to said Sewerage and Water Board. In lieu thereof, the Board may accept a Lien Bond.

PATENT RIGHTS

(18) The Contractor shall be liable for any and all royalties for any patented article or appliance furnished or used by him in the execution of this contract, and whenever the Sewerage and Water Board is formally notified or has reason to believe that a claim exists for royalty, damage, or loss of profits growing out of the use of any patents in the prosecution of such work, it shall have a right to retain out of any balance due to the said Contractor, an amount necessary, in its judgment, to satisfy such claim. The Contractor obligates himself to defend all claims or

suits brought against the Sewerage and Water Board for infringement of patents, and in case he should neglect to do so, and his surety should fail to do so for him, the Sewerage and Water Board shall have the right to take all necessary proceedings at his expense.

CONTRACTOR NOT AN AGENT

(19) It is well understood, that the right of supervision by the General Superintendent and other employees of the Board, does not make the Contractor an agent of the Board, and that the liability of the Contractor for all damages to persons or public or private property arising from the Contractor's execution of the work, is not lessened because of such right of supervision. This also applies when the Contractor's employees are employed on extra work or force account. Such right of supervision is retained in order to ensure to the Board the completion of the work, according to specifications, and to insure the public, in general, from all unnecessary inconvenience during the construction of the work.

GENERAL PROVISIONS

AUTHORITY OF GENERAL SUPERINTENDENT

(20) The Sewerage and Water Board (herein frequently called "The Board") will, in general, exercise its authority through its General Superintendent (herein frequently called "The Engineer"). The Engineer will assign to the work such assistants in the way of engineers, inspectors and other employees as are necessary to the proper conduct of the work and the inspection of materials and workmanship. All explanations or directions necessary for carrying out and completing satisfactorily the different descriptions of work contemplated and provided for under the plans and specifications, will be given by the said engineers, and the General Superintendent will finally decide all matters of dispute between the engineers and the Contractor, involving the character of the work, its quantity, and the compensation therefore.

All work under this contract, shall be done to satisfaction of the General Superintendent, who shall in all cases determine the amount, quality, acceptability and fitness of the several kinds of work and materials which are to be paid for hereunder and shall decide all questions which may arise as to the fulfillment of this contract on the part of the Contractors.

INCREASE OR DIMINUTION OF QUANTITIES

(21) At any time or times, prior to the Engineer's making recommendation to the Board that the contract be accepted as competed, (see paragraph No. 59, below) he shall have the right to increase or diminish the quantities of the items of work to be done or materials, etc., to be furnished under this contract; the increase or diminution may be applied to any one item, or to any number of items, in the Form of Proposal; some items may be increased while others are diminished; new items of the same general character may be added, or any item or items may be eliminated entirely.

The total net dollar value of increase or diminution allowable in any contract under the terms of this paragraph, shall not exceed ten per cent (10%) of the total amount of the contract, as bid on in the Form of Proposal, unless otherwise stated in the Special Specifications; it shall in no case exceed twenty per cent (20%) of the said total amount of the contract, except with the written consent of the Contractor.

(22) It may be the intent of the Board to expend a certain fixed sum, within close limits, on any contract. The right is reserved, therefore, to increase the extent of the work, if bids be lower than was anticipated or to decrease the extent of work if bids be high. Any increase of work, under this clause, will be of the same nature as that bid on. The increase or diminution mentioned in paragraph No. 21, is at the option of the Board and is to be made for the best interests of the Board; the increase or diminution mentioned just above in this paragraph, on account of low or high bids, may be made in addition to the other, and independent of it.

If the Board shall decide to exercise the rights reserved in this paragraph No. 22, it must so notify the Contractor within five (5) consecutive calendar days after the date of the signing of the contract, and must at that same time, inform him as to the amount of the certain fixed sum which the Board intends to expend on this contract.

CHANGES IN LOCATION, ETC.

(23) The Sewerage and Water Board reserves the right to change the locations of the structures to be built under this contract if for any reason the Engineer deems satisfactory, whether to avoid obstructions, either on the surface or underground, to avoid cutting expensive pavements (whether intrinsically expensive or expensive because of an excessive price bid), to make better connection with other structures, or for any other reason tending toward greater economy or better construction. Should such changes in the location, alignment, grade, form or dimensions of any part of the work under the contract, be made by the Engineer, either before or after the commencement of the work, the Contractor shall have no claim against the Sewerage and Water Board on account of such changes, but shall accept as full compensation the price bid for each unit of work which he is required to do regardless of whether or not the location of said unit of work shall be as shown in the plans upon which proposals are invited and compared, provided that such changes of location shall not involve any additional burden or hazard to the Contractor. The Contractor will be compensated for any such additional unavoidable burden or hazards in an amount to be fixed by the Engineer.

ASSIGNMENT OR SUBLETTING OF CONTRACT

(24) The contractor shall not sublet, sell, transfer, assign, or otherwise dispose of the contract or contracts, or any portion thereof, or of his right title, or interest therein, without written consent of the Engineer. In case such consent is given, the Contractor will be permitted to sublet a portion thereof, but shall perform with his own organization, work amounting to not less than fifty per cent (50%) of the total contract cost, except that any items designated in the contract as "specialty items" may be performed by subcontract and the cost of any such "specialty items" so performed by subcontract may be deducted from the total cost before computing the amount of work

required to be performed by the contractor with his own organization. No subcontracts, or transfer of contract, shall in any case release the contractor of his liability under the contract and bonds.

TRANSFERRING INTEREST IN CONTRACT

(25) No interest in this contract shall be transferred by the party or parties to whom the contract is awarded, and no assignment of the same, shall be made without the consent of the Sewerage and Water Board. Any transfer or assignment not approved by the Board, in writing, shall be null and void, and the Board can thereupon call upon the Contractor to complete his contract, call upon the bondsmen to take over, and complete the contract or cause the work to be given to other parties for completion, whichever may seem best to the Board.

FAILURE TO START, FAILURE TO COMPLETE

(26) The date of starting, the rate of progress and the time for completion of the work to be done under this contract, are understood and agreed to be essential conditions of the contract. If the Contractor shall fail to start work with an adequate force and adequate equipment and materials at the time required in the work order and at the place ordered by the Engineer, or if he shall fail to deliver materials in the required quantities and at the required time, he shall, for such failure, pay to the Sewerage and Water Board liquidated damages in the sum named in the Special Specifications, for each consecutive calendar day of delay in starting, beginning with the day named in the work order as the required day for starting work or for delivering materials and ending with the last day on which he shall not have complied with the order.

If the Contractor shall not have completed his work or completed delivery of his materials, as the case may be, within the time set in the Special Specifications, he shall, for such failure to complete his contract at the required time, pay to the Sewerage and Water Board liquidated damages in the sum named in the Special Specifications, for each consecutive calendar day that the work of the contract shall remain uncompleted beyond the time specified in the contract.

The Board shall retain liquidated damages for failure to start or failure to complete (and for failure to maintain proper progress, if the Special Specifications shall so provide) from any money due or to become due the Contractor under the operations of this contract and shall have the right to withhold the said money without being required formally to put the Contractor or his Surety, either or both, in default; if the money due the Contractor and available in the hands of the Board is not enough to cover the liquidated damages, the deficiency shall be supplied by his Surety. It is specifically understood and agreed that the said liquidated damages constitute compensation to the Board for actual damage suffered and not an arbitrary penalty.

However, the Contractor shall not be charged with liquidated damages or any excess cost for delay in starting or completing work or in making deliveries of material when the said delay is due to unforeseeable causes beyond the control of the Contractor and without fault or negligence on his part, such unforeseeable causes including (but not restricted to) inability to obtain supplies and materials, Acts of God, acts of the public enemy, acts of the Sewerage and Water Board, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes or delays of subcontractors caused by such conditions. The relief of the Contractor from the charge of liquidated damages for delays due to the said causes is contingent, however, on his notifying the Sewerage and Water Board, in writing, of the causes of the delay within seven (7) consecutive calendar days after the beginning of such delay; the Board will then ascertain the facts and the probable extent of the delay and will, within a reasonable time, inform the Contractor of its decision in the matter.

FAILURE TO MAKE PROGRESS, BOARD'S RIGHT TO TAKE OVER

(27) If the work to be done under this contract shall be abandoned by the Contractor, or if at any time the Engineer shall be of the opinion that the performance of the contractor is being unnecessarily delayed, or that the Contractor is willfully violating any of the conditions of these specifications, or of this contract, or that he is executing the said conditions in bad faith, the Engineer will notify the Contractor in writing, to that effect. Within the five (5) consecutive calendar days following the delivery of such notice to the Contractor, no tools, material or machinery shall be removed from the site of the work or from their accustomed storage place. If the Contractor does not, within the said five (5) days, take such measures as will, in the judgment of the Engineer, ensure the satisfactory continuation and completion of the work, the Engineer may then, by and with the consent of the Board, notify the Contractor to discontinue work on this contract, or either the whole contract or on some specified part or parts thereof, at the discretion of the Engineer. The Contractor shall immediately respect such notice and shall stop work and shall cease to have any right to possession of the ground, of the tools, machinery or materials upon the ground. The Engineer shall then have the power, under the direction of the Board, to place such and so many persons as he may deem advisable, by contract or otherwise, to work at and complete the work above referred to, and to use such tools, machinery and materials as he may find on the site of the said work or to procure other tools, machinery and materials as he may deem necessary to the proper carrying-on of the work, and to charge the expense of said labor,

tools, machinery and materials to the Contractor. The expenses so charged shall be paid by the Sewerage and Water Board out of any money then due, or that may later become due the Contractor under the terms of this contract, and in case the said expenses are greater than the sum that would have been payable to the Contractor under the terms of this contract, if the said work had been completed by the Contractor, then the Contractor or this surety, shall promptly reimburse the Board for the excess expense.

(28) The Contractor shall be prompt in issuing orders for the purchase of any machinery, equipment, or other articles, which he is obligated to furnish under this contract and he shall notify the Engineer as soon as these orders have been issued. If, in the opinion of the Engineer, there is undue delay on the part of the Contractor in issuing the said purchase orders, the Engineer will notify the Contractor to that effect. If within ten (10) consecutive calendar days after the date of the Engineer's notice to the Contractor, the Engineer has not received satisfactory evidence of compliance therewith, the Engineer shall have the right to purchase for the Contractor's account, the said machinery, equipment or other articles and to have such work done in connection therewith, in his opinion, may be necessary for the prompt and proper performance of this part of the Contractor's obligations under this contract; he shall pay for the said machinery, etc., and for the work done in connection therewith, out of any monies due or to become due the Contractor under this Contract, and the Board shall not be held liable for any loss or damage claimed by the Contractor for materials purchased or work done under the provisions of this paragraph.

EXTENSION OF TIME

(29) The Sewerage and Water Board may, at its discretion, and for any cause which it may deem sufficient, extend the times set for starting and for completing this contract, either or both.

BONDSMEN WAIVE RIGHT TO SPECIAL NOTICE

(30) It is distinctly understood and agreed that the bondsmen have familiarized themselves with the wording of this contract and that they waive the right of special notification of changes in the plan contemplated in this contract, of extensions of time, of decreased or increased work, of the cancellation of the contract, or of any other act or acts by the Sewerage and Water Board or its authorized agents under the terms of this contract; failure to notify bondsmen of changes shall in no way relieve the bondsmen from their obligation under the contract.

EXTRA WORK

(31) When, for the proper prosecution of a contract, work becomes necessary which has not been provided for in any clause of the contract, the Engineer will issue an order, and the Contractor shall perform the work stated in the order. Such work, frequently called "Extra Work" may be paid for in any or all of the following ways as determined by the Engineer in each case:

(a) On A Unit Price Basis:

Such items of Extra Work, as are covered by unit prices bid or fixed in the Contractor's proposal, will be paid for at the said prices; for such items of Extra Work as are not covered by unit prices bid or fixed in the proposal payment, will be made at unit prices agreed on by the Engineer and the Contractor before the order is issued. These unit prices shall be written into the contract as unit prices for added items and these prices shall apply to similar items in any subsequent Extra Work. Payments will be made and retainers withheld on these added items the same as on the items bid on in the original proposal.

(b) On A Lump Sum Basis:

A lump sum price for the whole proposed piece of Extra Work will be agreed on by the Engineer and the Contractor before the order is issued. This lump sum price shall be written into the contract as a price for an added item. Payments will be made and retainers withheld on such added items the same as on the items bid on in the original proposal.

(c) On A Force Account:

This method of payment is to be used only where it is impracticable to use either method (a) or method (b). The Contractor will be paid for all general foremen, foremen, labor, teams and trucks actually engaged on such specific work for the time actually so employed at the rates actually paid, but not exceeding the rates paid similar workmen, etc., on similar work on the remainder of the contract and for all materials and insurance involved in the Extra Work at the actual cost thereof. For the use of power equipment and machinery he will be paid a reasonable

rental, calculated either on the rent-per-day rates, or the rent-per-month rates, whichever is the lesser, which shall include the cost of fuel, lubricants, etc., to be determined in advance by agreement between the Engineer and the Contractor.

In addition to the above stated payment for labor, materials, insurance and equipment rental, the Contractor will be paid a fee for his superintendence, general expense and profit. This fee paid to the Contractor shall be understood also to reimburse him for any sub-contractor's general expense and profit which the Contractor may allow to one or more sub-contractors, if any such "force account" extra work is done under sub-contract. This fee shall be twenty (20) per cent of the cost of the labor, materials, insurance, and equipment rental incurred in doing the Extra Work. Payment for Extra Work done on this basis will be made month by month as the bills are rendered by the Contractor for the work done during each calendar month; the payment will be complete, no retainer will be withheld. Where Extra Work is to be done by force account the Engineer shall have the right to appoint a timekeeper to represent the Board and the Contractor shall furnish this timekeeper all facilities for obtaining a correct record of the time and the rates of the men and the equipment employed.

LABORATORY INSPECTION

(32) If the Engineer shall require laboratory inspection and testing, either or both, of any of the materials entering into the work being done under this contract, the Board will designate a laboratory of recognized standing for this purpose. The laboratory so designated will render bills for the inspection and the testing direct to the Sewerage and Water Board, the Contractor will not bear any part of the cost of the inspection and testing service, except that he must furnish, free of charge, the samples of materials required by the laboratory for the tests.

DRAWINGS AND SPECIFICATIONS

(33) The Contractor will be furnished with a set of drawings showing the details and dimensions necessary to carry out the work; dimensions given in figures shall have preference over the scale, and the Contractor shall verify these figures. The plans of the work and a copy of these specifications shall be kept constantly at the work by the Contractor or his authorized foreman. No deviation from the drawings will be allowed without the written direction of the Engineer. The drawings and specifications are intended to be explanatory of each other but should any discrepancy appear, or dispute arise as to the true meanings of the drawings and specifications in any point, the decision of the Engineer shall be final and conclusive. The plans and drawings furnished prospective bidders are intended to give a closely approximated idea of the proposed works, but are subject to such revision as the Engineer may deem necessary, or to the working out of fuller details where such may be needed to obtain the results desired as each particular point is reached in the progress of the work.

(34) The plans and specifications are intended to show the materials and methods to be used to complete the contract thoroughly and well but it is not intended that every detail of construction shall be shown. The Board cannot be held responsible for the lack of any detail the Contractor may require, nor for failure to provide in advance for any special construction which may be found necessary as the work progresses; plans showing such details or special construction, will be made and furnished the Contractor as occasion arises. No extra compensation above that for the additional quantity of the items involved, will be allowed the Contractor, unless it can be clearly shown that such special construction is beyond the scope and intent of the original plans and specifications. The Engineer shall have full power to decide as to the proper compensation for such work. The Engineer shall have the right to correct any clerical, mathematical or minor errors or omission in the contract, specifications or drawings, when such correction is necessary for the proper fulfillment of the contract. The Contractor does not warrant the plans and specifications to be in compliance with applicable laws, ordinances, regulations or building requirements or to be sufficient to perform the work required under this contract.

INSPECTION BY ENGINEER

(35) The Engineer shall have the right of access, at all times, to all work being constructed for this contract and to measure, inspect and test all work or material, either at the shops where it is made, or on the ground, and the Contractor shall provide safe and reasonable facilities therefore and prepare such customary samples as may be required.

DEFECTIVE WORK

(36) The inspection of the work at any time shall not relieve the Contractor of any of his obligations to fulfill his contract as herein described, and any defective work shall be made good, and any unsuitable materials may be rejected, notwithstanding that such work and material have been previously overlooked by the Engineer and accepted or estimated for payment.

QUALITY OF WORK

(37) All material and work, whether the quantity, dimensions and quality, are shown on the plans or fully specified in the specifications or not, are to be furnished in sufficient quantity and of sufficient dimensions for the proper execution of the work, and the quality and workmanship are to be the best throughout.

REJECTED MATERIAL

(38) The Engineer shall have the power to condemn any material or work which he considers is not in accordance with the plans or specifications, and the Contractor shall remove such rejected material from the site of the work immediately and not offer it again for inspection.

PATENTED ARTICLES AND ALTERNATES

(39) In any case, under these specifications where articles are specified as of a stated manufacture, or equal, or where in describing any stated item a patented process or device is included, the General Superintendent shall have the right to accept other devices processes which will, in his judgment, accomplish the same objects with equally good results and which are of equal durability and value. If articles, products or processes are to be offered as "equal" to those specifically mentioned, they shall be presented for consideration and approval by the Engineer within two (2) weeks after the award of the contract and the decision of the Engineer shall be final.

RESPONSIBILITY OF CONTRACTOR

(40) The Contractor shall furnish all transportation, scaffolding, bracing, apparatus, ways, works, machinery, paint and appliances requisite for the proper construction of his work under this contract. He shall cover or otherwise protect his work from loss or damage until the final acceptance of the contract, and shall repair promptly any injury done to it. All such loss or damage or injury is entirely his responsibility, whether the said work be completed or uncompleted, including any loss or damage to property of the Contractor or to materials in his possession, whether furnished by himself or by the Board.

He is responsible to the Board for damage caused by settlement of the ground due to his work caused by improper, illegal or negligent conduct of himself, his employees or his sub-contractors or by the improper use of any scaffolding, bracing, or apparatus, whether such damage is done to persons or to property including buildings in or near which his work is being done--whether the property be privately or publicly owned. He shall save harmless the Board from all claims relating to labor and material furnished for the work, or to inventions, patents and patent rights for articles and methods used in the work or in doing the work.

OFFICE AND RESIDENCE OF CONTRACTOR

(41) Any Contractor whose contract involves the furnishing and installing of materials in place in New Orleans, shall maintain an office in New Orleans, during the full terms of his responsibility under this contract, where mail can be received and notices served and received by the Contractor or his authorized agent. Communications forwarded by the United States mail are to be considered as having been delivered and received. The Contractor, or his authorized agent, shall also keep the Board advised of his place of residence and mail, addressed to the said residence, or notice delivered at the same said residence, shall have the same effect and force as if delivered at the aforesaid office of the Contractor.

SUPERVISION BY CONTRACTOR

(42) The Contractor shall give his personal supervision to the faithful prosecution of the work and shall keep it under his personal control. In his absence, he shall have a competent representative or foreman on the work, who shall follow, without delay, all instructions of the Engineer or his assistants in connection with this contract, and shall have full authority to supply equipment, material and labor immediately.

RESPONSIBILITY FOR DAMAGES

(43) The Contractor shall be responsible for any damage or loss of material during the progress of the work, until its final acceptance; he shall also be responsible for any damage by fire or the elements up to the time of the acceptance of the contract.

CONTRACTOR'S NEGLIGENCE

(44) When the Contractor has been notified in writing by the Engineer of any requirements or precautions neglected or omitted or any work improperly constructed, he shall attend to them at such times as directed; if he fails

to do so, the Engineer may perform such work at the Contractor's expense and deduct the cost thereof from any amounts due, or to become due, the Contractor.

COOPERATION WITH OTHER CONTRACTORS

(45) The Engineer will require the Contractor to cooperate with other Contractors having contracts adjoining his own, and to give them necessary facilities in building and completing the work at the junctions of the contracts, to such an extent as to avoid any undue burden on either Contractor.

LINES, GRADES, ETC.

(46) The Engineer will give all the necessary lines, levels, grades, etc., for the guidance of the Contractor, and the Contractor shall be responsible for the conformity of the work thereto. The Contractor shall provide suitable stakes and forms and shall render such assistance to the Engineer, at his own expense, as may be necessary to establish lines and grades for the guidance of his work, and shall carefully preserve the points so established at all times. Work done without lines, levels, and instructions having been given by the Engineer, or done during the absence of an inspector, will not be estimated nor paid for.

COMPETENT, ORDERLY WORKMEN REQUIRED

(47) Only competent men shall be employed on the work; if the Engineer shall notify the Contractor that any man on the work is incompetent, unfaithful or disorderly, or that he is abusive or threatening to inspectors, engineers, etc., such man shall be removed from the work at once.

NIGHT OR SUNDAY WORK

(48) No night or Sunday work requiring the presence of an engineer or inspector, will be permitted except in cases of emergency, and then only to such an extent as is absolutely necessary, and with the written permission of the Engineer; however, this clause does not operate in case of a gang, organized with the approval of the Engineer, for regular and continuous night work.

POLICE AND HEALTH REGULATIONS

(49) The Contractor shall comply with all police and health regulations of the City and State.

SIGNS, LIGHTS, WATCHMEN

(50) Wherever the Contractor's excavations are open, he shall keep conspicuously posted a sign bearing the words "Sewerage and Water Board Work" and the name of the Contractor, together with his office address, all in plain letters legible 100 feet away. The Contractor shall place sufficient lights on or near the work, and keep them burning from twilight to sunrise, shall erect a suitable railing or protection about all open trenches and other dangerous places, and provide on the work, day or night, all watchmen and flagmen, when necessary for the safety of the public.

CLEARING SITE

(51) The Contractor shall, at his own expense, clear away brush, weeds or other surface obstructions along the line of work, sufficiently for its proper prosecution, and so as to afford facilities for staking out the work and inspecting it.

WORK STRUCTURES

(52) The Contractor may build such sheds, storehouses, shops, etc., as may be necessary, provided such structures do not interfere with the reasonable public use of the streets or sidewalks. The location and construction of these are subject to the approval of the Engineer.

SANITARY ARRANGEMENTS

(53) Necessary sanitary conveniences for the use of the laborers on the work, shall be constructed by the Contractor wherever needed, secluded from public observation and maintained in a proper sanitary condition and in accordance with the regulations of the Sewerage and Water Board and the directions of the Engineer.

CLEANING UP

(54) On or before completion of the work, the Contractor shall, without charge therefore, carefully clean up all work executed by him, shall tear down and remove all temporary structures built by him and shall remove all rubbish of all kinds from any of the ground which he has occupied and leave them in first class condition. Before final acceptance each part shall be in condition and order at the expense of the Contractor.

MONTHLY PAYMENTS TO CONTRACTOR

(55) Neither the Sewerage and Water Board nor any member or agent thereof, shall be liable for, or be held to pay any money to the Contractor, except as provided in these specifications, and on making the last payment therein, provided the Sewerage and Water Board and every agent thereof, shall be released from all claims or liability to the Contractor, for anything done or unfinished relating to the work of this contractor or for any act or neglect of the Sewerage and Water Board, relating to or affecting the work of the contract, except the claim against the Sewerage and Water Board for any remainder of the amounts retained as provided in these specifications.

(56) The Contractor shall accept payment for the quantities of work actually performed, at the prices bid in his proposal, plus whatever payments for extra work may be approved and less any deductions provided for in the contract, as full compensation for furnishing all the labor, materials, tools, equipment, etc., needed to complete the whole work of the contract, well and faithfully done, in accordance with the drawings and specifications, and meeting the requirements of the Engineer; also as full compensation for all loss, damages or risks of every description, connected with or resulting from the nature of the work, or from any obstructions or difficulties encountered, of any sort or nature whatsoever, or from the action of the elements; also for all expenses in consequence of the suspension or discontinuance of the work as provided for in the contract.

(57) On or about the last day of each calendar month during construction, the Board's Engineer will estimate the total amount to date of the work done and acceptable according to the specifications, and the value of the said work at the prices bid or fixed in the contract, including such extra work as may have been approved and completed according to the provisions of sections (a) and (b) of paragraph No. 31, above. In the Special Specifications for each contract, there will be designated a percentage of the said value of the work done which will be retained by the Board as is specified below in paragraph No. 60. The said percentage will be deducted from the amount earned, and the remainder of the amount earned, less all legal deductions and all previous payments, will be paid to the Contractor.

ADVANCES FOR MATERIALS DELIVERED

(58) If it is so provided in the Special Specifications for any contract, the Board will make allowances for materials delivered but not yet used as is set forth below:

On or about the last day of each calendar month, during construction, the Board's Engineer will estimate the quantities of the several materials actually delivered to the site of the work, and as yet unused. The Sewerage and Water Board will advance to the Contractor in the monthly estimate, an amount equal to Ninety (90) per cent of their value, as represented by invoices verified by the Engineer. Each monthly advance on materials delivered, will in the next monthly estimate, be treated as a part of the amount already paid, and will be deducted from the amount then due on the contract.

COMPLETION OF CONTRACT AND FINAL PAYMENT

(59) When the contract has been completed and tendered for acceptance, the Engineer will have it carefully inspected for defects and re-measured to verify the quantities. If no defects are discovered, or when any defects found to exist have been repaired by the Contractor at his own expense, so that all the structures built by him, under this contract, and all the paved or unpaved surfaces disturbed by the work of this contract, are in acceptable conditions, as may be more fully set forth in that Section of the General Specifications covering the class of work done under this contract, or in the Special Specifications for this contract, either or both, the Engineer will recommend that the contract be accepted by the Board.

FINAL PAYMENT AND LIEN PERIOD

(60) The percentage of the value of the work done, as stated in Paragraph 57 above and particularly specified in the special specifications, will be withheld by the Board for a period of not less than forty-five (45) consecutive calendar days after the contract has been accepted by the Board, and such acceptance has been recorded in the Office of the Recorder of Mortgages for the Parish of Orleans. At the end of the forty-five (45) day period, the percentage withheld by the Board, will be paid to the Contractor, less any sums that may be legally deducted under any provisions of this contract, upon the Contractor or furnishing the Board with a certificate from the Recorder of Mortgages for the Parish of Orleans, certifying that the contract is clear of all liens and privileges.

MAINTENANCE PERIOD

(61) The maintenance period under this contract, except as otherwise specifically provided for herein, shall be for a period of forty-five (45) consecutive calendar days beginning from the day after the contract has been accepted by the Board, and such acceptance has been recorded in the Office of the Recorder of Mortgages for the

Parish of Orleans. During the maintenance period the Contractor will repair, at his own expense, all defects in the work that may arise, to the satisfaction of the Engineer. The Contractor shall restore all surfaces for which he is responsible under the specifications, whether unimproved, partially improved, or paved surfaces (See Section B of the General Specifications), and maintain them in good condition to the satisfaction of the Engineer. If the Contractor should fail or refuse to repair, at his own expense, any defects in structures or surfaces developing before the expiration of the aforesaid forty-five (45) days or to adjust satisfactorily any claims for damages to public or private property, the Board shall have the right to continue to hold the retainer and to make the necessary repairs and to satisfy the claims for damages, by such means as the Board shall elect, and to reimburse itself for the cost of these repairs and satisfied claims, out of the said retainer. Any surplus of this retainer will then be paid the Contractor, under the conditions above stated, any deficiency shall be made good by the surety.

UNSATISFACTORY WORK

(62) The Contractor shall re-execute any work that fails to conform to the requirements of the contract, and any defective work that appears during the progress of the work, and shall remedy any defects due to faulty materials or workmanship, which appear, within a period of one (1) year from the date of acceptance of the contract is recorded in the Office of the Recorder of Mortgages for the Parish of Orleans. The provisions of this paragraph apply to work done by direct employees of the Contractor and by subcontractors as well.

RIGHT TO MODIFY PREVIOUS ESTIMATES

(63) It is expressly understood and agreed, that until the final payment on this contract has been made, the Sewerage and Water Board shall not be precluded or stopped by any estimate, return of certificate, previously made or given by any engineer, inspector or other officer, agent or appointee of said Sewerage and Water Board, from ascertaining and showing the true and correct amount and character of the work which shall have been done, and the materials which shall have been furnished by the Contractor under this contract, nor from correcting any errors or omissions in any previous estimates, returns or certificates. Any money due or to become due the Contractor under this contract, may be retained by the Board to make correction of such errors or omissions, and if the said money shall be insufficient the Surety shall make the amount good.

CONTRACT TO BE IN ACCEPTABLE CONDITION AT TIME OF FINAL PAYMENT

(64) It is the intent of these specifications, and of the essence of this contract, that the Contractor shall deliver to the Board, at the end of the aforesaid maintenance period of forty-five (45) calendar days, all the work done under this contract free from defects and acceptable in all respects, conforming to the Special Specifications for this contract and to the General Specifications covering the class of work done under this contract.

WAIVER OF JURISDICTION

(65) The Contractor and his Surety will consent and yield to the jurisdiction of the Civil District Court of the Parish of Orleans, State of Louisiana and will formally waive any plea of lack of jurisdiction on account of their residence or domicile elsewhere, in the event of suit under the Contract or Bond.

NOTARIAL FEE SCHEDULE

Notarial work for all Sewerage and Water Board of New Orleans construction contracts, requiring to be notarized:

<u>Contract Value</u>	<u>Fee</u>
Under \$1,000.00	\$171.00
\$1,000.00 to \$49,999.99	\$314.00
\$50,000.00 to \$499,999.99	\$798.00
\$500,000.00 to \$999,999.99	\$1,714.00
\$1,000,000.00 or over	\$3,429.00

In addition to the above fees, the contractor shall pay the actual costs of recording all acts.

SPECIAL SPECIFICATIONS

FOR

CONTRACT 8129

KATRINA RELATED REPAIRS TO GARAGE 2 AT CENTRAL YARD

SECTION 1

CONTRACT DOCUMENTS AND SPECIAL CONTRACT SPECIFICATIONS

1-01 CONTRACT DOCUMENTS

The Contract Documents governing this Contract 8129, consist of the following papers, which are bound together under the one cover, namely:

Advertisement and Description of Contract 8129;

Contract and Bond;

Section A of the General Specifications, including Information for Bidders and General Provisions;

- * Section B of the General Specifications, covering general matters pertaining to construction;

- * Section C of the General Specifications, covering materials;
- These Special Specifications for Contract 8129 including the Form of Proposal, also The Drawings listed in the Advertisement and Description and Paragraph 1-02; These drawings are not bound with the other contract documents.

- * Specifications may be obtained from the Sewerage and Water Board website, www.swbno.org.

1-02 CONTRACT DRAWINGS

The Drawings listed below are included in the Contract Documents and shall govern the work performed under this contract.

Drawing Number 12045-A12, Sheets 1-22

- 1 - Cover & Index Sheet
- 2 - Code Summary
- 3 - Material Designations, Door Clearances, and Mounting Heights
- 4 - Reference Symbols and Architectural Abbreviations
- 5 - First Floor Demolition Plan
- 6 - Mezzanine and Second Floor Demolition Plan
- 7 - First Floor Plan
- 8 - Mezzanine and Second Floor Plan
- 9 - Roof Plan
- 10 - First Floor Reflected Ceiling Plan
- 11 - Mezzanine and Second Floor Reflected Ceiling Plans
- 12 - South and East Exterior Elevations and Enlarged Fence Elevation

- 13 - North and West Exterior Elevations
- 14 - Exterior Details
- 15 - Opening Schedule, Types & Details
- 16 - Room Finish Schedule, Interior Elevations & Millwork Details
- 17 - M1 – Mechanical Notes and Schedules
- 18 - M2 – HVAC Demolition Plan
- 19 - M3 – First Floor HVAC Plan
- 20 - M4 – Mezzanine and Second Floor HVAC Plan
- 21 - M5 – Roof HVAC Plan
- 22 - M6 – Mechanical Details

1-03 SCOPE AND EXTENT OF CONTRACT

- A. The SCOPE OF WORK to be performed under this contract consists of furnishing and delivering all labor, materials, supervision, construction equipment, mechanical and electrical equipment not furnished by the Board, travel, utilities, transportation, supplies, tools and services necessary for performing all work as specified in the Contract Documents, plus whatever work may be added as extra work under the provisions stated in Paragraphs No. 21 and No. 22 of Section “A” of the General Specifications.
The intent of the work is described as follows: The intent of the work is described as follows:

Repair and recoat the roof over the Garage portion of the building with fluid applied roofing. Demolish and replace office and storage area interiors including flooring, walls, and ceilings. New drywall is installed on existing metal studs throughout the second floor and on selected ceilings. VCT tile and cove base are replaced throughout. Walls and selected ceilings receive typical commercial paint finishes. Exterior stucco surfaces are repaired and repainted.

Wood doors are salvaged, refinished, and re-installed. Most metal doors and frames are replaced. Windows will be replaced. Hardware replacement is selective.

HVAC ducting will be disinfected and re-used. There are some ducting modifications. Roof mounted HVAC units have been removed previously, but are replaced, tested, and balanced under this contract.

Sanitary fixtures are removed, disinfected, and re-installed. New toilet partitions are installed throughout. Selected plumbing fixtures and toilet accessories are replaced.

In the Garage, metal surfaces (columns) are sand blasted and repainted. CMU walls are cleaned and painted to a height of 8.0' AFF. Commercial coiling doors are repaired and painted. Selected metal doors and frames are removed and replaced.

There is no electrical demolition or installation in this contract.

Details of the work are as follows:

Demolition and disposal
Disinfection and cleaning
Drywall
Acoustic Grid Ceilings
Flooring
Gypsum board walls and ceilings
Metal decking and roofing repairs
Roof coatings
Metal doors and frames
Aluminum windows
Interior finishes
Stucco and stucco repairs
Exterior finishes
Plumbing and restrooms
HVAC

1-04 LOCATION OF CONTRACT WORK

- A. The location of the work site is 2900 Peoples Avenue, New Orleans, Louisiana. The Contractor will perform all his work in a way that minimizes interferences with both the public and Water Board personnel. All schedules and methods of work are subject to approval by the Engineer.
- B. Because of the location of the job site on the grounds of the Central Yard, it is imperative that the Contractor schedule and conduct his work in such manner so as not to interfere in any way with the operation of the plant. Trucking through the plant, delivering and storing materials and equipment, shall be done with the approval of the engineer. The Contractor's personnel will be allowed to enter the Plant and park private vehicles on Sewerage and Water Board property (except in the Visitors Parking Area); however, he will be allowed to bring equipment and company vehicles only into the plant as necessary to execute the work of this contract. Equipment and vehicles may be required to be moved if their presence interferes with the normal operations of the plant.
- C. All work as described in this document must NOT interfere with water purification operations in general.
- D. All work of this contract MUST be coordinated with Central Yard personnel through the Engineer, with proper advanced notice.

1-05 COMPLETION TIME

- A. The Lump Sum portion of the work of this contract shall be completed in all respects and tendered to the Board for acceptance within 200 calendar days from the date of the "Work Order".
- B. The work performed within the time frame stated above shall also include repair

of damages to public or private property, complete cleanup of the premises, and completion of all punch list items generated by the Engineer's final inspection.

1-06 CITY AND STATE SALES TAXES

Applicable state and local sales and use taxes for purchase of materials and supplies furnished under this contract shall be paid by the Contractor. Such taxes shall be included in the lump sum bid for the work of this contract.

1-07 PROPOSAL FORM

All blank spaces in the Proposal Section shall be filled. A bid price shall be indicated for each bid item. Bids received without all such items completed will be considered non-responsive. The bid shall contain an acknowledgment of receipt of all Addenda.

1-08 BID PRICE

A. The Total Base Bid amount shall include and cover the performance of all labor and the furnishing of all materials requisite and proper for the work named herein and in the manner set forth, including mobilization, all as described in the Contract Documents.

B. There are no Alternate bids associated with this contract.

1-09 Louisiana Revised Statute 9:2716

Any contract between the Sewerage and Water Board of New Orleans and a person or entity entered into as a result of fraud, bribery, corruption, or other criminal acts, for which a final conviction has been obtained, shall be absolutely null and shall be void and unenforceable as contrary to public policy. Any person whose conviction causes the nullity of the contract as provided shall be responsible for payment of all costs, attorneys' fees, and damages incurred in the re-bidding of the contract.

1-10 BID EVALUATION

A. All bids received will be evaluated on the basis of the Total Base Bid in the Proposal Section. If there is a discrepancy between the base bid and the sum of the unit prices, the unit prices shall govern.

B. Bidders shall provide prices, where required in the Proposal Section, for all work. Any bids received without prices submitted for all required items will be rejected and will not be considered.

C. If two or more proposals are received equal in amount and lower than any other proposal, the Sewerage and Water Board reserves the right to evaluate these proposals and to decide which proposal will be accepted. Preference will be given to home contractors, all conditions being equal.

1-11 ACT 318 OF 1958

A. Under the terms of Act 318 of 1958, of the Regular Session of the Legislature of the State of Louisiana, all things being equal, preference must be given to either

(1) firms doing business in the State of Louisiana or (2) to products produced (or) grown (or) manufactured in the state.

- B. Before any bill for supplies used shall be paid to any non-resident firm, a statement in writing shall be submitted by the seller to the effect that his firm has paid all taxes duly assessed by the State of Louisiana and its political subdivisions, including franchise taxes, to the state and its political subdivisions.

1-12 BID DISPUTES

Bidders may telephone the Purchasing Department to determine the bid results. Objection by a bidder to any recommended award must be made in writing to the Purchasing Agent or Assistant Purchasing Agent within 72 hours (excluding Saturdays, Sundays, and Holidays) after the recommended bid award has been posted.

1-13 BID CONFLICTS

- A. Prices bid in the proposal must be written in full in words also in figures. If there is a difference between the words and the figures in any price bid, the price written in words shall be considered to be the true bid.

- B. Erasures or other changes in the Bid Prices must be initialed by the Bidder.

NOTE: ONLY BIDS WRITTEN IN INK OR TYPEWRITTEN AND PROPERLY SIGNED BY A MEMBER OF THE FIRM OR AUTHORIZED REPRESENTATIVE WILL BE ACCEPTED. PENCIL FIGURES OR PENCIL SIGNATURES WILL DISQUALIFY BIDDER.

- C. BIDS MUST BE ENTERED ON PROPOSAL FORMS EMBODIED IN THESE SPECIFICATIONS.

1-14 ESCALATION

Firm Proposals Are Desired and no proposal containing an escalation clause will be considered unless the limits of escalation are clearly defined.

1-15 INFORMALITIES

Paragraph (6) of Section "A" - General Specifications is hereby amended to read, "The Sewerage and Water Board reserves the right to reject any and all bids or proposals for just cause. The Board may waive informalities in the lowest bid or proposal and accept that bid or proposal, if this should appear to be in the best interest of the Board."

1-16 DEPOSIT OR BID BOND

The amount of the deposit or bid bond for this contract as required in Paragraph No. 1, in Section "A" of the General Specifications shall be five per cent (5%) of the total lump sum amount of the proposal made payable to the Sewerage and Water Board of New Orleans and subject to forfeiture upon failure to sign contract and execute bond within ten (10) days after official award of the contract.

1-17 PERFORMANCE BOND

Bidders attention is called to Paragraph 8 of Section A of the General Specifications, relating to the furnishing of 100% performance bond, which shall be amended by adding to it the following statements: (R.S. 38: 2219) "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 and in the Federal Register, or by a Louisiana Domiciled Insurance Company with at least A minus (A-) rating in the latest printing of the A.M. Best's Key Rating Guide to write individual bonds up to ten percent of policyholder's 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. In addition, any surety bond written for a public works project shall be written by a surety or insurance company that is currently licensed to do business in the State of Louisiana."

1-18 PRE-BID CONFERENCE

A MANDATORY Pre-Bid Conference will be held at 11:00 a.m. on Friday, September 5, 2014 at the Sewerage and Water Board Engineering Building Conference Room, 8800 South Claiborne Avenue, New Orleans, Louisiana. Any Bidder failing to attend this Pre-Bid Conference will be considered a Non-Responsive Bidder.

1-19 DOMESTIC MANUFACTURE

- A. All equipment to be furnished and components of all items specified herein shall be of domestic produce, manufacture and assembly, i.e., manufactured and assembled within the limits of the United States. Parts must be available from suppliers that manufacture components in the USA. The Board reserves the right to waive this requirement if, in the opinion of the Engineer, it appears to be in the best interests of the Board.
- B. Sewerage and Water Board staff will determine the ability of the lowest bidder to make the facility repairs specified hereon. Should the lowest bidder be found "non-responsive", then an informal hearing will be held to provide the lowest bidder the opportunity to refute the reasons for disqualification.
- C. The name of a certain brand, make, model, catalog number, manufacturer or definite specifications indicated on the contract plans and/or included in specifications is used only to establish the standard for quality and/or function desired, and that the bidder is not restricted to a specific brand, make, manufacturer or specification named but that the brand, make manufacturer or definite specifications is used only to set forth and convey to prospective bidders the general style, type, character, and quality of product desired and that equivalent products will be acceptable as judged by the Board Engineer. (See Paragraph 2-21)

1-20 PROJECT SIGN

- A. Prior to commencement of the work, the Contractor shall furnish and erect one (1) Sewerage and Water Board project sign at the site of the work in location directed

by the Board Engineer.

- B. The sign shall be 8 feet high by 8 feet wide and shall conform to the requirements of the schematic layout included **at the end of this section**. The proportional layout and spacing of the lettering on the sign may vary slightly from the schematic, depending on the exact wording and number of names to be listed. Contractor shall submit a schematic for approval prior to fabrication to accommodate any revisions to names or graphics.
- C. Sign Construction: Sign material shall be 3/4" thick EXT-DFPA Medium Density Overlay (MDO) plywood. Sign frame shall be 2 x 4 No. 4 Pine, Wolmanized, nailed on the flat side. Nails shall be on six (6") inch centers, nailed from the front, set and puttied. The sign shall be sealed and primed with at least one (1) prime coat on front and back prior to application of the background and lettering. All lettering shall be capitalized. Paint shall be sign painter enamel with black lettering on a white background.
- D. Contractor shall furnish and install 4 x 4 treated wood sign posts with 2 x 4 treated wood braces, set firmly in the ground to rigidly support the sign. The top of the sign shall stand 11'-0" above grade. Contractor shall be responsible for maintenance of the sign, damage or loss of any kind throughout the duration of the contract. Contractor shall remove the sign upon completion and acceptance of the contract and restore the grounds to condition acceptable to the Board Engineer.

* * * END OF SECTION 1 * * *

SECTION 2

SUPPLEMENTAL SPECIAL CONTRACT PROVISIONS

2-01 BIDDERS TO EXAMINE LOCATION AND PLANS

- A. Each Bidder shall make a personal examination of the location of the proposed work and of the surrounding area. He shall thoroughly acquaint themselves with the details of the work to be done and all the conditions and obstacles likely to be encountered, including soil conditions, in the performance and completion of work. Bidders shall inform themselves as to the facilities for the transportation, handling, and storage of equipment and materials.
- B. Each bidder shall carefully study the plans, specifications and other contract documents and thoroughly satisfy themselves as to the conditions under which the work is to be done, and as to the character, qualities and quantities of work to be performed, and materials to be furnished, and be prepared to execute a finished job in every particular.
- C. No extra charge will be accepted except as may be specifically provided for elsewhere in these Contract Documents.

2-02 BIDDERS QUALIFICATIONS

Bidders shall be known to be skilled and reputable Contractors qualified to do the type of work described by the Contract Documents. Proposals from others will not be considered. These qualifications shall be in addition to those required by the Louisiana State Licensing Board for Contractors under LA-R.S. 37:2150 through 37:2163, as amended.

2-03 PROPOSALS FROM LICENSED CONTRACTORS

Proposals will be received from only those Contractors who are licensed by the Louisiana State Licensing Board for Contractors under Louisiana Revised Statutes 37:2150 through 37:2163 as amended and are qualified under the provisions of the said act to perform the work called for in these specifications. Any bid in the amount of \$50,000.00 or more that does NOT show the Contractor's license number on the bid envelope will be automatically rejected, and will be returned to the bidder stamped "REJECTED" and will NOT be read aloud at the public bid opening.

2-04 EXECUTION, CORRELATION AND INTENT OF DOCUMENTS

It is understood that except as otherwise specially stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, light, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver within the specified time.

2-05 ORGANIZATION OF SPECIFICATIONS

The Specifications are separated into sections for convenience of reference. These separations do not establish limits to the Contract between the Contractor and Subcontractors or between Subcontractors.

2-06 INFORMATION AND CLARIFICATION FOR PROSPECTIVE BIDDERS

Prospective bidders may obtain clarification regarding questions arising from the interpretation of the Contract Documents by contacting the Sewerage and Water Board Purchasing Agent, Room 133, 625 St. Joseph Street, New Orleans, LA, 70165, (504) 585-2124.

2-07 AWARD AND SIGNING OF CONTRACT

- A. The proposal submitted by the lowest bidder will be tentatively selected by the Sewerage and Water Board at its next scheduled Finance Committee meeting of the Board after the date of opening bids provided that the lowest proposal is acceptable to the Sewerage and Water Board. The final award of the contract will be made at the subsequent Board meeting. All prices bid must be held firm for 120 days or until final award of contract by the Board. The Board reserves the right to reject any one or all bids for just cause and to waive informalities in Bidding.
- B. After submittal of required Insurance and Bonds, in form acceptable to the Sewerage and Water Board, the selected Bidder will be authorized by the Executive Director of the Board to appear before the Notary for the Sewerage and Water Board of New Orleans to sign the contract within ten (10) consecutive calendar days from the date of the notice.

2-08 ORDER TO START WORK AND COMPLETION OF WORK

- A. Sometime after the contract has been signed, the Engineer will issue a "Work Order" directing the Contractor to start work at a point or points designated within 25 calendar days after the date of the "Work Order". The "Work Order" shall be the Contractor's authority to purchase materials for use on this contract; materials ordered by the Contractor before the "Work Order" has been issued are ordered at his own risk and the Board has no obligation concerning them.
- B. The Contract shall be completed in every respect, including the repair of all damaged public or private property resulting from the work of this contract, within the specified number of calendar days.

2-09 LIQUIDATED DAMAGES FOR FAILURE TO START OR COMPLETE ON TIME

- A. The Contractor shall pay to the Board the sum of \$500.00 liquidated damages for each calendar day beyond the times specified should the Contractor fail to commence or start the work within the time allotted or fail to complete individual phases of the work within the times allotted for said individual phases.
- B. The Board shall retain the amount of such damages from any money due or to become due the Contractor under this contract without the necessity of the Board putting the Contractor or his Surety, either or both, in default.
- B. Special notice is hereby given to all Contractors that the terms stipulated in Paragraph 26 of Section A of the General Specifications, titled "FAILURE TO START, FAILURE TO COMPLETE" as well as the liquidated damages specified in the above subparagraphs will be strictly interpreted and rigidly enforced.

2-10 BEFORE STARTING CONSTRUCTION

- A. Before undertaking each part of the work, the Contractor shall carefully study and compare the contract documents and check and verify pertinent figures shown thereon including all pertinent field measurements. Contractor shall promptly report in writing to the Engineer any conflict, error or discrepancy that the Contractor may discover. Prior to commencement of work under this Contract or the continuance of any work hereunder or under any modification to the Contract Documents, Contractor shall provide written notice to the Engineer of any defects in the plans and specifications and the specific engineering reasons thereof, and of any prospective damages to persons or property that could be or would be caused by the work and/or duties to be performed under this contract.
- B. Prior to beginning the work, Contractor shall submit to the Engineer an estimated progress schedule indicating the starting and completion dates of the various stages of the work, a preliminary schedule of Shop Drawing submissions and a preliminary schedule of values of the work.

2-11 PRECONSTRUCTION CONFERENCE

- A. After the time specified in the Notice to Proceed, or as agreed by the parties, but before Contractor starts any portion of the work at the site, a conference will be held for review and acceptance of the schedules referred to in Section 2-10, to establish procedures for handling Shop Drawings and other submittals, securing of Permits, and for processing applications for payment, and to establish a working understanding among the parties as to the work, protection of existing facilities, conflicts with other utilities or owners, and other pertinent items associated with the Contract.
- B. Conference shall be attended by the Board Engineer, the Contractor and his jobsite Superintendent, principal Subcontractors, representatives of principal suppliers as deemed necessary and appropriate, the Design Engineer and his Project Manager and others as deemed advisable by the Contractor, the Board or the Design Engineer.

2-12 PERMITS AND CERTIFICATES

- A. Before commencing work, the Contractor shall obtain at his own expense any permits from the City of New Orleans, Building Inspection Division that are necessary. The Contractor shall also secure at his own expense any necessary inspection certificates required after the work is done.
- B. Evidence of compliance shall be furnished to the Board prior to starting work in the case of permits or within 10 calendar days after completion of that work requiring inspection certificates.

2-13 GENERAL SPECIFICATIONS AND THEIR APPLICATION

The fact that certain paragraphs of the General Specifications have been specified as applying to this contract does not in any way imply that paragraphs not quoted do not apply; in all cases where the General Specifications are not directly contradicted by these Special Specifications, the General Specifications shall have full force and effect; nor shall the fact that certain clauses of the General Specifications refer to operations not constituting a part of the work of this contract be construed as in any way weakening

the binding force of the General Specifications in the remaining clauses.

2-14 CONFLICT BETWEEN THE GENERAL AND SPECIAL SPECIFICATIONS

In case of any conflict between the "General Specifications" herein, and these "Special Specifications", the latter shall govern.

2-15 CONFLICT BETWEEN DRAWINGS AND/OR SPECIFICATIONS

- A. In case of the conflict between the bid documents (drawings and the specifications), the Engineer shall be the sole authority in determining which of the two shall take precedence in the Contract Documents. Such conflict shall not be a basis for an extra expense to the Board.
- B. The Contractor is hereby cautioned to base his price and work upon the more costly item in event of conflicts, which may exist within either the specifications or the contract drawings, and no claim for extra expense will be entertained on this basis.

2-16 CONTRACT DRAWINGS AND SPECIFICATIONS FROM THE BOARD

- A. The Engineer will furnish to the Contractor free of charge, one (1) set of specifications and one (1) set of reproducible drawings for the Contractor's use. Reproduction costs shall be borne by the contractor. The Engineer will also furnish ten (10) copies of any revised drawings.
- B. The work shall be executed in strict conformity with the contract specifications, and the Contractor shall do no work without proper instructions.
- C. Contract drawings are descriptive of the work to be performed and are to be used for General Guidance only. Contractor shall take and verify all measurements and dimensions in the field. Do not scale. Contractor shall assume all responsibility for failure to take proper and accurate measurements.
- D. These plans and specifications shall be considered to be complimentary, one to the other, and work indicated in/on one shall be as binding as if indicated in both. Discrepancies between drawings and specifications or any clarifications deemed necessary shall be brought to the attention of the Engineer prior to the submission of a bonafide bid. Submission of a bonafide bid indicates that the Contractor has been adequately informed on all phases of the work and that he can and will perform in accordance with these plans and specifications.
- E. All equipment shall be installed in accordance with the manufacturer's recommendation and any conflicting data shall be verified before bids.
- F. After award of contract, the Engineer's interpretation of these documents shall be final.

2-17 CHANGES

- A. Minor changes or additions to the contract (defined as those changes or additions which do not change the total cost of the contract or those which do not increase or decrease the total cost of the contract by an amount exceeding 5% of the base bid of the original contract) may be made by the Engineer upon written notice to the Contractor.

- B. Changes of greater extent or value may be made only by resolution of the Board, when such changes are deemed necessary or desirable to improve the quality or efficiency of the work, or to make these specifications operative, or to facilitate the Contractor without injury to the interests of the Board. Any work done by the Contractor without such resolution is done at his own risk, and the Board assumes no responsibility therefore.
- C. No notice of such change shall be required to be made to the Contractor's Surety and neither the Contractor nor his Surety shall be, in any manner, relieved of any obligation which they have assumed under this contract by or through such change or changes as may be made.
- D. Increase or Diminution of Quantities

The Board reserves the right to alter the quantities of work included in this Contract as may be found to be necessary or desirable. Such increases, decreases and/or other alterations shall not invalidate the Contract nor release the Surety and the Contractor. The Contractor agrees to accept the work as altered, the same as if it had been part of the original Contract. No claims shall be made by the Contractor for any loss of anticipated profits because of any such alteration, nor shall such alteration be considered as waiving or invalidating any conditions or provisions of the Contract.

2-18 PAYMENTS

- A. Payments for work to be done under this contract will be made by the Board in accordance with Paragraphs (55) through (58) of Section A of the General Specifications.
- B. Initial payment to the Contractor will be predicated upon his compliance with Paragraph 2-10 of these specifications relative to securing of all necessary permits.
- C. Credits to be allowed the Board by the Contractor for work abandoned or not to be done shall be calculated on the same basis as "Extra work".
- D. Payments for extra work, whether unit price work, lump sum work, or force account work will be made and retainers will be withheld on items of extra work in the same manner as on the items bid on the original proposal.
- E. Retainer: "The percentage of the value of the work done..." which will be retained by the Board as referred to Paragraph (60) of Section "A" of the General Specifications is defined as follows:
 - 1. On contracts that are priced \$500,000.00 or more, the Board shall withhold 5% of the total amount earned, as billed, until the contract is finally accepted and a clear Lien and Privilege Certificate is submitted. Payment for material stored shall be made at 90% of the paid invoice value and 5% retainage will be withheld from this amount.
 - 2. On contracts priced less than \$500,000.00, the Board shall withhold 10% retainage.

2-19 PAYMENT FOR MATERIAL DELIVERED TO JOB SITE

The Board may make allowance for material delivered to the job site but not yet used in construction, in accordance with Paragraph 58 of Section A of the General Specifications, provided that conditions of security and areas for storage on the jobsite are judged suitable by the Engineer to adequately protect the interest of the Board. The allowance will be in the form of advanced payment for the material, as defined in Paragraph 58. Ninety (90%) percent of the value of the materials as delivered, as represented by invoices, will be included in the estimate. The amount of the retainer will then be subtracted from the total estimate (composed of the work done plus 90% of the invoice price of the material).

2-20 CONTRACTOR'S PLANS, SAMPLES, AND DATA

- A. The Contractor shall submit for approval, with such promptness as to cause no delay in this work or that of the Board, six (6) copies each of all shop, assembly, or erection drawings and lists of material and equipment for erection, together with other information in such detail as to permit the Engineer to judge whether the proposed material, equipment, or arrangement will meet the requirements of the drawings and specifications. The Engineer will return two (2) annotated copies of each drawing to the Contractor. When the drawings have received final approval, the Contractor shall forward two (2) copies of each to the Engineer for his files.
- B. All submittals, regardless of origin, shall be stamped with the approval of the Contractor and identified with the name and number of the contract, Contractor's name, and references to applicable specifications paragraphs and contract drawings. Each submittal shall indicate the intended use of the item in the work. When catalog pages are submitted, applicable items shall be clearly identified. The current revision, issue number, and date shall be indicated on all drawings and other descriptive data.
- C. The Contractor shall accept full responsibility for the completeness of each submission and shall verify that all exceptions previously noted by the Engineer have been taken into account.
- D. The Engineer shall be allowed 28 working days to process the above listed drawings, lists, and diagrams. The Engineer's approval shall not relieve the Contractor of responsibility for correctness of his submittals. The Contractor shall bear any costs or expense incurred to revise or replace material or equipment, furnished in accordance with his submittals, so as to bring the work into conformance with the drawings and specifications.
- E. Any need for more than one resubmission, or any other delay in obtaining the Engineer's review of submittals, will not entitle the Contractor to extension of contract time unless delay of the work is directly caused by a change in the work authorized by a Change Order or by failure of the Engineer to return any submittal within 28 working days after its receipt in the Engineer's office.

NOTE: The fact that the Contractor furnishes on the job items that are listed in the specifications and not a substitution does not relieve the Contractor from furnishing submittals to the Engineer as stated in the preceding paragraphs.

- F. The contract documents are prepared to establish the intent of the required construction. Approval of the contractor's submittals, which may be based upon

items different from that specified and/or shown on the plans and specification, shall NOT relieve the contractor of all costs necessary and proper to make the items fit and function in accordance with the evident intend, all as judged by the Engineer.

2-21 SUBSTITUTE MATERIALS AND EQUIPMENT

All materials and/or equipment indicated on contract plans and/or included in specifications by Manufacturer's Name, Catalog or Model Number has been selected to establish a standard for quality and/or function. If the Contractor wishes to substitute Material and/or Equipment of another Manufacturer because of availability or as "an equal" he shall, after signing of contract, comply with the following:

- A. Such Materials and/or Equipment must be submitted for Engineer's approval within forty-five (45) consecutive days after signing of contract and thereafter approved as "Equal" by the Engineer.
- B. If Contractor fails to submit the Materials and/or Equipment substitutions within forty-five (45) days limit or if any one of the Materials and/or Equipment submitted within specified period is not approved by the Engineer, then only Materials and/or Equipment specified in the Contract Documents will be accepted.
- C. The term "Equal" used herein is defined as meaning "Equal", in the opinion of the Board Engineer, with regard to quality, fit, finish, and utility.
- D. No more than one submittal of a Material and/or Equipment substitute for each item of Material and/or Equipment indicated on drawings and/or included in specifications will be reviewed for approval by the Board Engineer.

2-22 PRIOR APPROVAL

All bids must be based upon the specified items. If the Contractor wishes to substitute "or equal" prior to the bid opening, he shall be responsible for the substitution's equality to the item(s) specified. The Board will entertain prior approval of substitutions up to 14 working days before bid opening. The Board reserves the right to evaluate the equality of the substitute item(s) and its decision regarding the acceptability of the item(s) will be final.

2-23 CODES AND STANDARDS

Wherever in the Contract Documents references are made to NEC, NESC, AWWA, ASTM, ANSI, NEMA or any other standards or requirements, it shall be understood that the most current issues of the standards or requirements of the National Electrical Code, National Electrical Safety Code, American Water Works Association, American Society for Testing and Materials, American National Standards Institute, National Electrical Manufacturers Association, etc., are intended and shall apply, except where specific dates are specified and except to the extent that the standards or requirements may be in conflict with applicable laws, regulations, ordinances, etc., of the State of Louisiana or the City of New Orleans.

2-24 LINES AND GRADES

Paragraph 46 of Section "A" of the General Specifications is amended to read as follows:

"The Engineer will establish permanent control points for the centerline of the construction and a control benchmark for elevations. From these established control points and the benchmark, the Contractor shall establish all locations and grade of the work and shall be solely responsible for the exact position of all parts of the work with reference to the established line and the benchmark. The Contractor shall maintain his own field engineering force, for this purpose, that of the Engineer being for checking the Contractor's locations only. The Contractor shall furnish, free of charge, all stakes, permanent bench construction, templates, instrument platforms, and other materials necessary for marking and maintaining points and lines given, and shall furnish the Engineer such assistance as he may require in checking the layout of the work. The Contractor will be held responsible for the protection of all stakes and marks and if, in the opinion of the Engineer, benches or lines established by the Engineer have been destroyed or disturbed, they shall be replaced at the Contractor's expense."

2-25 SURVEY AND LAYOUT DATA

- A. All field books, notes and other data developed by the Contractor in performing surveys required as part of the Work shall be available to the Engineer for examination throughout the construction period. All such data shall be submitted to the Engineer with the other documentation required for final acceptance of the work.
- B. Contractor shall keep neat and legible notes of measures and calculations made by him in connection with the layout of the Work. Copies of such data shall be furnished to the Engineer or Resident Project Representative for use in checking Contractor's layout as provided under Lines and Grades. All such data considered of value to the Board will be transmitted to the Board by the Engineer with other records upon completion of the Work

2-26 MATERIALS BY CONTRACTOR AND MATERIALS BY OTHERS

The Contractor shall furnish all materials required for the various items of work except where specifically shown otherwise in the Contract Documents.

2-27 OPERATIONS AND MATERIAL STORAGE AREA

- A. Any area of the Board's property can be used by the Contractor for storage, work operations, etc., contingent upon the Engineer's approval. At the time approval is granted, the Engineer will outline the particular qualifications to be imposed in the use of that area. If materials are stored anywhere within the area without this approval, the Engineer, at his discretion, can order them moved to a more suitable location.
- B. All operations of the Contractor including storage of material on Sewerage and Water Board's premises shall be confined to areas authorized or approved by the Engineer. The Contractor shall hold and save the Sewerage and Water Board harmless from liability of any nature occasioned by his operations.
- C. Temporary buildings (storage sheds, shops, offices, etc.) may be erected by the Contractor only with the approval of the Engineer, and shall be built at no cost to the Sewerage and Water Board. Such temporary buildings and utilities shall remain the property of the Contractor and shall be removed by him at his expense upon completion of the work.

- D. No equipment or material shall be placed where access to any station by truck will be obstructed in the event of a breakdown.
- E. No materials or equipment may be placed over underground structures whenever such storage or use may impair effectiveness or limit maintenance, or impose excessive loadings.
- F. The Engineer may order moving of materials of equipment at no cost to the Board even from places where approval has been granted if it becomes necessary to the operation of the Board's facilities because of things unforeseen at the time of approval, such as breakdowns, failures, etc.
- G. Any area occupied by the Contractor shall be cleaned up in accordance with the requirements of Paragraph No. 54, in Section A of the General Specifications.
- H. The Sewerage and Water Board assumes no responsibility for any loss of or damage to the Contractor's material, tools, or supplies.
- I. Trees and shrubs shall not be cut or damaged without the permission of the Engineer.

2-28 WATER AND OTHER UTILITIES

- A. It shall be the responsibility of the Contractor to make all necessary arrangements for the provision of water, electricity, drainage, sanitary sewage disposal, gas, compressed air, and any other utility service required to prosecute the work of this contract.
- B. Water used by the Contractor at the jobsite will be furnished by the Board at a cost to the Contractor. Contractor shall familiarize himself with "Sewerage and Water Board of New Orleans Hydrant Meter Installation Non-potable (Standard) and Potable (Special Festival) Water Use" Policy and Procedure. These documents are available on the Sewerage and Water Board's Web site:
http://www.swbno.org/custserv_information_docs.asp.
- C. Contractor shall complete a hydrant meter application for his construction project for each location, if more than one is needed. The hydrant meter(s) shall be turned over to the Sewerage and Water Board every six (6) months for recalibration by the Board's Meter Shop located at 8800 South Claiborne Ave. Each Hydrant Meter shall be returned to the Meter Shop at the end of the construction project otherwise forfeit the deposit(s).
- D. Costs of all other services shall be borne by the Contractor.
- E. Connections to fire hydrants shall only be made with meters obtained from the Sewerage and Water Board Customer Service Department, 585-2097, which shall record water usage for record purposes and which shall be returned to the Board as a condition of acceptance of the Contract. Application for the meter requires a \$1,500.00 deposit that is refundable upon return of the meter in undamaged and operable condition.
- F. If the bidder is selected as the lowest responsive and responsible bidder and is awarded this contract, then should the Contractor owe the Sewerage and Water Board of New Orleans ("Board") any funds not relating to this contract by virtue of the Contractor

having been previously provided any services from the Board such as water or any other service, the parties agree to discharge by set-off the Board's debt and the Contractor's debt once the Contractor submits its Request for Payment or any similar document such as a request, invoice, etc., in connection with the Contractor's performance of work on this contract, both debts being at the time enforceable.

2-29 EMERGENCY TELEPHONE

The Contractor shall, before contract work begins, furnish to the Engineer Telephone Numbers at which company officers or responsible persons can be contacted at night, weekends and holidays in case of emergencies.

2-30 PROJECT WORK SCHEDULE

- A. Upon receipt of the "Work Order" and prior to commencement of any work on the contract, the Contractor shall be required to furnish a combined cost breakdown and progress schedule. This document will be used in the preparation of progress payments to the Contractor.
- B. The form of the combined schedule, although subject to change upon order of the Engineer, shall consist of:
 1. Separation of the entire construction project into its stages, as well as any specific related stages such as bond, insurance, material or equipment shipment, etc., in terms of actual dollar value.
 2. A listing of these construction stages with the proposed starting and completion date shown in bar graph form alongside each construction stage. The "proposed progress" bar graph shall be divided into monthly increments beginning from the date of the "Work Order" and extending to the contract completion date. At the end of each monthly increment, the Contractor shall indicate by a percentage figure directly on the bar graph space the percent completion he expects to attain for that interval.
 3. Shown directly below the proposed progress bar graph shall be an "actual progress" bar graph with a percentage completion indicated at monthly intervals intended to represent the actual progress toward completion for that interval.
- C. The actual monthly progress percentage multiplied by the construction stage dollar value will result in a figure which when added to the other monthly construction stage dollar values and their respective percentage multipliers will give a total to be used for a progress payment to be made to the Contractor.
- D. Since the combined cost-progress schedule to be submitted monthly is to be used in the preparation of the progress payment, it is imperative that the Contractor exercise careful consideration in assigning the percent complete expected on his proposed graph and it is expected that the actual percent complete shall rarely exceed the proposed percent. The Contractor shall re-examine his proposed schedule monthly and alter it accordingly to insure this does not occur.
- E. Should it appear to the Board's Engineer that the cost breakdown on progress schedule is in error or proves inadequate, the Engineer will direct the Contractor to alter his form to make it comply with the requirements of the Board.

2-31 JOB SITE DRAWINGS AND SPECIFICATIONS

- A. A complete and current set of contract drawings and specifications, including any addenda, shall be maintained on the job site by the Contractor.
- B. One copy of all approved shop drawings, equipment or material drawings, etc. shall be maintained on the job site by the Contractor.

2-32 CONTRACTOR'S WORK

- A. The Contractor shall furnish, deliver, and unload all materials, tools, appliances and rigging necessary for the completion of this Contract as covered by these specifications.
- B. The Contractor shall furnish all labor, skilled and unskilled.

2-33 CONTRACTOR'S RESPONSIBILITY FOR WORK

- A. The Contractor shall give personal attention to and supervise the work to the end so that it shall be prosecuted faithfully; and, when the Contractor is not personally present on the work, the Contractor shall be at all time represented by a competent superintendent or foreman who shall be present at the work and who shall receive and obey all instructions or orders given under this contract, and who shall have full authority to execute the same, and to supply materials, tools and labor without delay, and who shall be the legal representative of the Contractor. The Contractor shall be liable for the faithful observance of any instructions delivered to the Contractor or to the Contractor's authorized representative.
- B. Until final written acceptance of the project by the Board, the Contractor shall have the charge and care thereof and shall take every precaution against damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or non-execution of the work. The Contractor shall rebuild, repair, restore and make good all damages to any portion of the work, before final acceptance, including damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor; acts of God, of the public enemy or of governmental authorities and shall bear the expenses thereof.
- C. In case of suspension of work from any cause, the Contractor shall be responsible for the project and shall take such precautions as necessary to prevent damage to the project, provide for normal drainage and erect any necessary temporary structures, signs or other facilities at his expense.

2-34 CONTRACTOR'S EMPLOYEES

The Contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the work any unfit person or anyone not skilled in the task assigned to him.

2-35 OTHER CONTRACTS

The Sewerage and Water Board has, or may undertake, or award, other contracts for other, or additional work and this Contractor must fully co-operate with such other Contractors and Sewerage and Water Board employees and carefully fit his own work to such other, or additional work, as may be directed by the Engineer. This Contractor

must not commit or permit any act that will interfere with the performance of work by any other Contractor or Sewerage and Water Board employees.

2-36 PARKING FACILITIES

Contractor personnel will not be permitted to park personal vehicles on S&WB property due to limited and restricted area available for this purpose. The Contractor will be allowed to bring construction equipment and construction vehicles only into the site as necessary in the execution of this contract but may be required to remove them if their presence interferes with the operation of the Board, at the discretion of the Engineer.

2-37 BOARD'S RIGHT TO OCCUPANCY

- A. The Board will have full access to and full use of all existing utilities during the entire period of construction for the conduct of its normal operations. The Contractor shall cooperate with the Engineer and the Board in all construction operations to minimize conflict, and to facilitate Board usage.
- B. The Contractor shall at all times provide proper facilities for access and inspection of the work by representatives of the Board, the Engineer, inspectors, and any such official Governmental Agencies as may be designated by the Board as having jurisdictional rights to inspect the work.

2-38 SITE SECURITY

- A. All Contract Employees who enter Sewerage and Water Board Facilities shall have current and legible picture ID Badges issued by the Contractor. No one will be allowed to enter the Facilities without displaying this badge, which shall also be worn, and visible at all times.
- B. The Contractor shall insure that the site is properly secured at the end of each workday. Fences shall be intact and the gates locked. The Contractor shall also provide and maintain all necessary flagmen, watchmen, barricades, devices as required for the protection and safety of the work and the public against personal injury and property damages. The Contractor will be responsible for any and all damages, injury or loss resulting from his failure to provide such necessary protective precautions.

2-39 INJURIES AND DAMAGES TO PERSONS AND PROPERTY

- A. The Contractor shall be held alone responsible for all injuries to persons, and for all damage to the property of the Sewerage and Water Board or others, caused by or resulting from the negligence of himself, his employees, or his agents, during the progress of, or connected with the prosecution of the work, whether within the limits of the work or elsewhere, and whether under the contract proper or as extra work.
- B. The Contractor must protect and support all water, sewer and gas pipes or other conduits and buildings, walls, fences or other properties that are liable to be damaged during the execution of his work. He shall take all reasonable and proper precautions to protect persons, animals and vehicles of the public from injury, and shall erect and maintain a fence or railing around all excavation and place a sufficient number of warning lights about the work and keep them illuminated from twilight until sunrise, and shall employ one or more watchmen, if required, as an additional security. He must, as far as practicable and consistent with good

construction, permit access to private and public property and leave fire hydrants and catch basins and canals free from encumbrances. He must restore, at his own expense, all damaged property caused by any act of omission or commission on his part, or on the part of his agent, including sidewalks, curbing, sodding, pipes, conduits, sewers and other public or private property, to a condition as good as it was when he entered upon the work.

- C. In case of failure on the part of the Contractor to restore such property or make good such damage, the General Superintendent may upon forty-eight (48) hours notice proceed to repair, rebuild or otherwise restore such property as may be deemed necessary, and the cost thereof, will be deducted from any monies due, or which may become due, under this contract.
- D. The Contractor shall indemnify and save harmless the Sewerage and Water Board from all suits and actions that may be brought against it by reasons or any injury, or alleged injury, to the person or property of another, resulting from negligence or carelessness in the execution of the work, or because of failure to properly light and guard the same, or on account of any act of commission or omission on the part of the Contractor, his representative or employees.
- E. There will be no direct payment for erection and maintaining a fence or railing around excavation, placing warning lights and providing watchmen and supporting and protecting utilities as prescribed in (B) above.

2-40 NIGHT, WEEKEND OR HOLIDAY WORK

Night, weekend or holiday work requiring the presence of an Engineer or inspector will be permitted only in cases of emergency, and then only to such an extent as is absolutely necessary and with the written permission of the Engineer. In the event such work becomes necessary, no extra payment will be made.

2-41 SUSPENSION OF WORK

- A. The Engineer may order the Contractor in writing to suspend, delay or interrupt all or any part of the work for such period of time as he may determine to be appropriate. The Engineer may also suspend, delay or interrupt the work wholly or in part due to the failure of the Contractor to correct conditions unsafe for the workmen or the general public; for failure to carry out provisions of the contract; for such period of time as may deem necessary due to unsuitable weather; or for any other condition or reason deemed to be in the public interest.
- B. No adjustment to the time of completion for the project will be made if the suspension, delay or interruption to the work is ordered due to the fault or negligence of the Contractor; however, if such suspension, delay or interruption is ordered for reasons other than the Contractor's negligence, the period of such suspension, to be determined by the Engineer, shall be added to the time specified for the completion of the work under this contract.
- C. If the work is suspended for any reason, all materials delivered at the work but not yet placed therein shall be neatly stored so as not to constitute an obstruction.

2-42 INSPECTION AND ACCEPTANCE

- A. All work shall be subject to inspection and test by the Board at all reasonable times

and at all places prior to acceptance. Any such inspection and test is for the sole benefit of the Board and shall not relieve the Contractor of the responsibility of providing quality control measures to assure that the work strictly complies with the contract requirements. Inspection or test shall not relieve the Contractor of responsibility for damage to or loss of the material prior to acceptance.

- B. The Contractor must promptly replace rejected material or correct any workmanship found by the Board not to conform to the contract requirements. The Contractor shall promptly remove rejected material from the premises.
- C. If the Contractor does not promptly replace rejected material or correct rejected workmanship, the Board (1) may, by contract or otherwise, replace such material or correct such workmanship and charge the cost thereof to the Contractor; or, (2) may terminate the Contractor's rights to proceed in accordance with the Paragraph 27 of the Section "A" of the General Specifications.
- D. The Contractor shall furnish promptly, without additional charge, all facilities, labor, and material reasonably needed for performing such safe and convenient inspection and test as may be required by the Engineer. All inspection and tests by the Board shall be performed in such manner as to not unnecessarily delay the work. Special, full size, and performance tests, shall be performed as described in this contract. The Board reserves the right to charge to the Contractor any additional cost of inspection or test when material or workmanship is not ready at the time specified by the Contractor for inspection or test or when re-inspection or retest is necessitated by prior rejection.
- E. Should it be considered necessary or advisable by the Board at any time before acceptance of the entire work to make an examination of work already completed, by removing or tearing out same, the Contractor shall, on request, promptly furnish all necessary facilities, labor and material. If such work is found to be defective or nonconforming in any material respect, due to the fault of the Contractor or his subcontractors, he shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, an equitable adjustment shall be made in the contract price to compensate the Contractor for the additional services involved in such examination and reconstruction and if completion of the work has been delayed thereby, he shall, in addition, be granted a suitable extension of time.
- F. Unless otherwise provided in this contract, acceptance by the Board shall be made as promptly as practicable after completion and inspection of all work required by this contract. Acceptance shall be final, and conclusive except as regards latent defects, fraud, or such gross mistakes as may amount to fraud or as regards to the Board's rights under any warranty or guarantee.

2-43 PROJECT CLOSE-OUT

- A. Satisfactory project close-out is a condition of final acceptance of the Work and will be performed after the following is completed.
 - 1. Contractor shall deliver to the Engineer all construction records, certifications, and other documents in accordance with these Contract Documents. All damaged or deteriorated surfaces shall be touched up or repaired to the satisfaction of the Engineer. All incomplete or defective work shall be remedied as required by the provisions stated herein for Inspection and Acceptance.

2. Contractor shall remove from the site all of his temporary structures, trailers, tools equipment, supplies, and unused or waste materials. Roads, fences, and other facilities damaged or deteriorated because of Contractor's operations shall be repaired to the satisfaction of the Engineer. All ground surfaces affected by Contractor's operations shall be restored by grading, raking, smoothing, and other necessary operations. The site shall be thoroughly cleaned and all rubbish, trash and debris removed.
 3. Board issued hydrant meters shall be returned to the Sewerage and Water Board Meter Shop, 8800 South Claiborne Avenue, for final reading after completion of the Contract. Return of the meter is a condition of acceptance of the contract.
- B. After all work is complete, any necessary changes in the Contract amount will be determined by the Engineer and the necessary adjustment, if any, will be incorporated into a final Change Order.
- C. Upon satisfactory completion of closeout activities and delivery of Record Drawings to the Engineer, Contractor shall submit applications for Final Payment as provided in the General Specifications.

2-44 AS-BUILT DRAWINGS

- A. The Contractor shall furnish one (1) neat and legibly marked blue line set of contract drawings to depict actual "as-built" conditions.
- B. The "as-built" drawings shall show all construction, elevation, equipment, mechanical and electrical systems and connections as installed or built.
- C. The work under this contract will not be considered "complete" until "as-built" drawings, prepared to the satisfaction of the Engineer, are received.
- D. There will be no direct payment for furnishing the "as-built" drawings specified above.
- E. Provide copies of operation and maintenance manuals for all equipment, as specified in Section 2-18. Manuals shall include spare parts lists recommended by the manufacturer.

2-45 SAFETY

- A. The Contractor shall take proper precautions to safeguard his work force and the Board's facility during his work. Only Engineer approved methods of construction shall be used.
- B. The completed installation and operations during installation shall comply with the Occupational Safety and Health Act (OSHA) and all changes in effect at the time proposals are submitted. Particular attention shall be directed to safety regulations for excavations and confined space entry.
- C. At all times during the course of this contract, the contractor will be in compliance with all federal, state, and local health and safety requirements, will allow inspection of the worksite by the Sewerage and Water Board's Safety Unit, and will provide copies of his written safety program and written safety procedures to the Board's

Safety unit within one calendar week if required by the Board's Safety Unit. A senior employee of the contractor and/or any subcontractor will review the Sewerage and Water Board Safety Orientation Notice (Notice), and will explain the information in this Notice to every employee who will enter Board facilities or jobsites. This notice is included at the end of this section as an attachment to the specifications for this contract.

2-46 INSURANCE CERTIFICATE - AMENDED INSURANCE REQUIREMENTS

- A. Insurance requirements as outlined in Paragraph 16 of Section "A" of the General Specifications are hereby amended as shown below in the following sub-paragraph "C".
- B. The Contractor shall submit the required insurance certificates no later than 10 days after Notification of Award of the contract.
- C. **INSURANCE REQUIREMENTS (AMENDED):**

The Contractor shall maintain, at his own expense, and in good standing, such insurance as will protect the Sewerage and Water Board of New Orleans (the Board), the City of New Orleans (the City), their officers, officials, employees, boards, commissions, and volunteers, as well as the Contractor himself, and any subcontractors, from and against any and all claims for damages to public or private property or personal injury, including death, to employees or the public, which may arise from any operations under this contract or any of its subcontracts. The coverage shall contain no special limitations on the scope of protection afforded to the Board or the City. Both the Board and the City shall appear as "Additional Insureds" on all Commercial General Liability and Business Automobile Insurance. Any failure to comply with reporting provisions of the policy shall not affect coverage provided to the Board and the City, their officers, officials, employees, boards and commissions, and volunteers. The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

The Contractor, Subcontractor(s), and their insurers shall agree to waive all rights of subrogation against the Board, the City, and their officers, officials, employees, boards and commissions, and volunteers for losses arising from work performed by the Contractor for the Board and the City. Each insurance policy required by this contract shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, or reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the Risk Manager of the Sewerage and Water Board of New Orleans.

In general, insurance is to be placed with insurers with an A.M. Best's rating of A-:V, although this requirement may be reviewed and modified by the Risk Manager of the Sewerage and Water Board of New Orleans in the best interest of the Board. The Risk Manager may also consider performing such review upon written request from the Contractor. The Contractor shall furnish the Sewerage and Water Board of New Orleans with certificates of insurance affecting coverage required by this contract.

The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates of insurance are to be received and approved by the Risk Manager of the Sewerage and Water Board of New Orleans before work commences. The Sewerage and Water Board of New Orleans

reserves the right to require complete, certified copies of all required insurance policies at any time. The contract number must be included in the description on the insurance certificate.

The following are the types of insurance policies and the minimum limits of insurance coverage that shall be maintained by the Contractor during the entire term of the Contract:

- a) WORKERS' COMPENSATION AND EMPLOYERS LIABILITY INSURANCE, as will protect him from claims under Workers' Compensation Laws. The Workers' Compensation section of the policy shall afford Statutory Limits and be in accordance with all Louisiana Workers' Compensation Statutes. The Employers Liability limit shall not be less than \$1,000,000 each accident for bodily injury by accident and \$1,000,000 each employee/policy limit for bodily injury by disease. Whenever any vessel or floating equipment is involved, the insurance shall afford coverage under the Federal Longshoremen's and Harbor Workers' Act, and shall also include protection for injuries and/or death to Masters and Members of the crews of vessels with statutory limits in accordance with the Jones Act.
- b) COMMERCIAL GENERAL LIABILITY INSURANCE, as will protect from claims for personal injury, occupational disease and sickness or death, property damage and environmental damage with a limit of not less than \$1,000,000 each occurrence and \$2,000,000 general aggregate, including Explosion, Collapse, and Underground Property Damage Hazards. The Products-Completed Operations aggregate limit shall not be less than \$1,000,000 each occurrence. The general aggregate limit shall apply separately to this project.
- c) BUSINESS AUTOMOBILE INSURANCE, which shall cover liability arising out of any auto (including Owned, Hired, and Non-Owned autos). The limit of liability shall not be less than \$1,000,000 each accident for all injuries, property damage, and/or death resulting from any one occurrence.
- d) OWNER'S AND CONTRACTOR'S PROTECTIVE LIABILITY INSURANCE, in the name of the Sewerage and Water Board of New Orleans, and the City of New Orleans as Named Insureds. The limits of liability shall be the same as specified in Paragraph (b) above, and shall include Explosion, Collapse and Underground Hazards.
- e) PROPERTY INSURANCE, required on all work except sewer and water drainage pipelines, reinforced concrete canals, work completely underground, and similar work (however Contractor is not relieved of responsibility therefore).
 1. BUILDERS RISK INSURANCE (covering Fire, Extended Coverage, Vandalism and Malicious Mischief) will be carried on a completed value or reporting form, for not less than 100% of the value of the work, including foundations.
 2. In addition, INSTALLATION FLOATER INSURANCE (on an "All Risks" form) will be carried on all machinery and equipment to be installed, whether furnished by the Sewerage and Water Board or by Contractor, for not less than 100% of the installed value of the machinery and equipment. This insurance shall be written in the same Insurance Company carrying the Builder's Risk Insurance (where possible), shall include testing, and shall terminate only when installation has been accepted by the Sewerage and

Water Board. (NOTE: "ALL RISKS" Builder's Risk Insurance will be acceptable in lieu of Builder's Risk and installation Floater Insurance, and must meet the requirements of the Property Insurance above). The Builder's Risk and Installation Floater Policies required above shall include the names of the Sewerage and Water Board of New Orleans, and the City of New Orleans, and will cover the interests of all sub-contractors without specifically naming them. If the insurance is written subject to a deductible clause, Contractor assumes responsibility for the amount of the deductible.

- f) Commercial Umbrella/Excess Liability Insurance, which shall provide \$2,000,000 in excess of the Commercial General Liability, Employer's Liability, and Business Automobile Liability insurance limits.

In addition, the Contractor shall be required to furnish to the Risk Manager of the Sewerage and Water Board of New Orleans all copies of investigative reports with regard to any and all claims filed with the Contractor and his insurance carriers relative to the contract, with the exception of claims filed against his Workers' Compensation Insurance within 48 hours of the accident, injury, or incident. Such reports shall include date, location, and description of loss as well as amounts of settlements or judgments in order that annual aggregate limits may be monitored by the Sewerage and Water Board of New Orleans for the Contractor's compliance with these specifications.

The furnishing of insurance as provided above shall not relieve the Contractor of his responsibility for losses not covered by insurance. Prior to the signing of the contract, evidence of all such applicable insurance satisfactory to the Board shall be filed with the Risk Manager of the Sewerage and Water Board. All policies shall be in insurance companies authorized to do business in Louisiana and shall remain in full force and effect until the final completion of the work and acceptance thereof by the authority of the Board.

The Contractor and/or his insurer shall notify the Risk Manager of the Sewerage and Water Board at least thirty (30) days in advance of any insurance coverage to be canceled or of any insurance coverage that will expire. The Contractor shall simultaneously furnish the Board evidence of new coverage to be effective the same day and hour of the expired or canceled coverage. In the event the Contractor fails to submit this evidence of new coverage five (5) days prior to cancellation date or expiration date of any policy or policies, the Sewerage and Water Board will obtain the required coverage to become effective on date of cancellation or expiration of said policies. The cost of such new coverage shall be the expense of the Contractor and any expenditure incurred by the Board for this coverage will be deducted from any balance due to the Contractor. Should the Board be unable to secure new coverage to take the place of the expired or canceled policy or policies, a "stop work" order will be issued and all work on the contract shall cease on the same date and hour as the coverage ceases. Should the Contractor fail or refuse to secure coverage within five (5) days after the date of the "stop work" order, then in such case the Contractor shall be declared to be in default, and the contract between the parties shall be considered canceled and of no force or effect between the parties reserving all rights of the Board against the Contractor and his surety.

If this transaction requires the Contractor or Sub-Contractor employees to enter Sewerage and Water Board facilities or jobsites, a senior employee of the contractor will review the Sewerage and Water Board Safety Orientation Notice (Notice), and will explain this Notice to every employee who will enter Board facilities. This Notice is included as a part of the specifications for this contract.

If this contract involves the handling or delivery of hazardous materials, the contractor shall ensure that he or any deliverer is at all times in compliance with the OSHA and EPA Standards that are most applicable to management of the potentially damaging substance. The contractor shall also ensure that manufacturer of the materials maintains product liability insurance for any commodity involved in this transaction which, if defective, could cause bodily injury and property damage. The vendor, any and all sub-contractors, and all insurers shall agree to waive all rights of subrogation in favor of the Sewerage and Water Board of New Orleans as a condition of the required insurance.

2-47 INDEMNIFICATION

- A. To the fullest extent permitted by law, the Contractor shall indemnify, defend and hold forever harmless and defend the Sewerage and Water Board of New Orleans, its officers, agents, employees, representatives, and insurers from any and all claims, demands, suits, money judgments, costs and expenses, arising out of any accident, injury or damage to loss of property or personal injury during the performance of this contract, growing out of, resulting from or by reason of any act of omission by the Contractor, his agents, or employees.
- B. Contractor shall further indemnify and hold the Board harmless from any an all claims and liens for labor, services or materials furnished to the Contractor in connection with the performance of this contract.
- C. Limitations by statute as to worker's compensation or any other benefits, payable by or on behalf of the Contractor, to any injured party shall not limit the Contractor's indemnification of the Board under this agreement.

2-48 WORKERS' COMPENSATION AND UNEMPLOYMENT COVERAGE

A. WORKERS' COMPENSATION:

The Contractor expressly agrees and acknowledges that it is an "independent contractor" as defined in LSA-R.S.23:1021(6). That its employees shall not be considered employees of the Board for workers' compensation coverage, and that the Board shall not be liable to the contractor or its employees for any workers' compensation benefits or coverage.

B. EXCLUSION OF UNEMPLOYMENT COMPENSATION COVERAGE:

Contractor herein expressly agrees and acknowledges that it is an "independent Contractor" as defined in LSA-R.S.23:1472(E), that neither the contractor nor any one employed by the Contractor shall be considered an employee of the Board for the purpose of employment compensation coverage.

2-49 S&WB RIGHT TO AUDIT PROVISION

The Board shall have the right to audit by its personnel or its authorized representative, at all reasonable times, any and all records pertaining to the administration of this contract by the contractor, including its records of any subcontractor (s) employed on the contract. Such records shall be made and kept by the contractor in accordance with generally accepted accounting principles and practices. Records shall include, but are not limited to, accounting records, daily reports, correspondence and subcontract files

(hard copies as well as computer readable data, if it can be made available). Records subject to audit shall also include, but not be limited to, those records necessary to evaluate and verify direct and indirect costs (including overhead allocations) as they may apply to cost and/or change order requests associated with this contract. The Board also reserves the right to interview employees, make photocopies, and inspect any and all records at a reasonable time for a minimum of three (3) years after completion of the project or formal acceptance by the Board of the contract. Contractors shall be required to retain such files of the project as described herein for a minimum of three (3) years after completion of the project or formal acceptance of the contract by the Board.

2-50 EQUAL EMPLOYMENT OPPORTUNITY

A. In all hiring, employment, or other activity made possible or resulting from this agreement, there shall not be any discrimination against any employee, or applicant for employment because of age, race, color, religion, handicaps, sex, or national origins, and where applicable, affirmative action will be taken to ensure that employees are treated during employment without regard to their age, race, color religion, handicaps, sex and national origin. This requirement shall apply to, but not be limited to, the following:

Employment, upgrading, demotion or transfer, recruitment and advertising, layoff or terminations, rates of pay or other forms of compensation, and selection for training, including internship and apprenticeship.

B. All solicitations or advertisements for employees shall state that all qualified applicants will receive consideration for employment without regard to age, race, color, religion, handicaps, sex or national origin.

2-51 LABOR STANDARDS

A. The minimum wages to be paid laborers and mechanics shall be the prevailing wages for corresponding classes of laborers and mechanics employed on projects of a character similar to the contract work; said prevailing wages to be determined by the Secretary of the U.S. Department of Labor. (See the following tables)

B. The successful bidder is to make available to the Board, complete records in connection with payment of employees during the term of the job in order to permit the Internal Audit Division to check as to adherence to the wage scale presently in effect in accordance with U.S. Government standards.

2-52 DRUG FREE WORKPLACE POLICY

A. It is the policy of the Sewerage and Water Board that all workplaces and facilities be kept drug and alcohol free at all times.

B. In order to ensure compliance with this policy, the Board has approved and implemented the "Drug Free Workplace Policy" which is attached hereto at the end of this section and which shall be implemented and rigidly enforced on this contract.

2-53 BI-WEEKLY JOB SITE MEETINGS

A. Once every two (2) weeks, or as determined necessary by the Engineer, on a date and location mutually agreed upon by the Contractor and the Engineer, a meeting

shall be held for review of the Project, including, but not limited to, the construction and inspection schedule, progress of the construction, traffic control, submittals and any other issues that may arise. The meeting may be used to review the Contractor's monthly application for payment. The Contractor shall preside over all these meetings, and shall arrange for subcontractors and material suppliers to be present as needed to discuss their specific work.

- B. The Engineer will keep and distribute minutes of each meeting to all attending parties.

2-54 ENVIRONMENTAL REQUIREMENTS - MEETING CONSENT DECREE CONDITIONS

- A. The parties agree that the work and duties required to be performed in accord with the Contract Documents shall meet and comply with all environmental requirements to include the laws and regulations of the United States and the State of Louisiana, and shall satisfy and be in accord with the provisions of the Consent Decree with attachments entered into by and between the BOARD and CITY with the EPA and the UNITED STATES in the matter entitled "UNITED STATES OF AMERICA V. SEWERAGE AND WATER BOARD OF NEW ORLEANS, ET AL," No. 93-3212, United States District Court, Eastern District of Louisiana and all modifications thereof, which provisions the CONTRACTOR must acquaint itself and become familiar with prior to bidding on said Contract.
- B. The above mentioned Consent Decree is available on the Sewerage and Water Board web site, http://www.swbno.org/docs_consentdecree.asp
- C. CONTRACTOR specifically acknowledges the Board has made said Decree with attachments available for review and CONTRACTOR has read said decree with attachments or the pertinent parts thereof and is familiar with the terms and conditions thereof, and will pay any fines or penalties that will be assessed against the BOARD or CITY (or reimburse them therefore) which are imposed by the terms of said decree with attachments resulting from the actions of CONTRACTOR in performance of or its failure to perform its duties under this Contract.

2-55 REPORT, CONTAINMENT/BY-PASS AND CLEAN-UP

- A. The Contractor shall develop a plan to report, contain/by-pass and clean up all sewage spills or unanticipated hazards that would adversely affect the health of the community.

B. REPORT

A report shall be given immediately to the S&WB Emergency Desk (942-2920). The information communicated in the report must include location, nature of problem, name of project, name of company performing work, name of the individual making the call, time of incident and other pertinent data as necessary. It should be communicated as a Priority I incident.

C. CONTAINMENT/BY-PASS

The Board's first priority in operating its sewer system is to protect the public health of the citizens and the environment in the most cost effective manner possible.

The plan must consider all available options for immediately eliminating the

discharge or diverting to a containment area, as well as options for containing the contents of, for example, a damaged main which will be evacuated during repair work. It is impossible to anticipate all the specific conditions and factors that may be relevant for any particular incident. Each incident will be unique.

To this end the Contractor will by-pass, direct and temporarily store sewage as the situation dictates to avoid contamination of soil, street, etc. that would place the citizens in contact with waste products. If these sewer wastes reach a canal it will be the Contractor's first effort to remove the contamination. Drainage pumping from the contaminated canal will be stopped.

In those circumstances when sewage cannot be removed from the canal system because of location or weather, where possible the procedures will be dilute and flush the canals.

Considerations

The following are some of the more significant considerations; which will impact the ultimate approach to mitigation activities.

- Can any or all of the discharge be returned to the sewerage system immediately? If so, how much, where and by what means?
- What is the anticipated duration of the repair activity?
- Can normal sewage flow be rerouted? If so how much?
- How many and which pump stations will be affected by isolation of the force main?
- Do any of the stations have the capability to bypass flow to the gravity system?
- How long can the normal sewage flow in the affected gravity sections be interrupted before property damage or upstream overflows occur?
- Is there the capability to create in-system containment by artificial draw down of the associated gravity system(s) and if so, how much?
- Is there the capability to create a containment area utilizing a drainage canal or catch basin, how would the flow be reintroduced into the sewerage system and could an effective clean-up of the containment area be accomplished? (One or more containment areas could be considered not only at the repair site but at an affected pump station or other location).
- Is there a capability to haul sewage (vac tanker, vac truck etc.) from either the repair site or anticipated up-stream overflow location?
- Is a rainfall event anticipated during the repair or clean-up activities?

Because of the varying conditions, locations and circumstances which have an impact on the planning process, the development of specific procedures is not practical. It is far more important for a response action plan such as included herein, to provide for the availability of the resources including senior management expertise, such that a response can be initiated in an expedient and thoughtful

manner. As evidenced in other sections of this document, the Board has a policy of requiring Division and Department managers to be available on call 24 hours per day and to personally respond to all emergencies including Sanitary Sewer Overflows.

The ability to call on the experience of these managers as a matter of policy insures all possible avenues of mitigation are considered and all required resources are dedicated to this response effort.

D. CLEAN-UP/DISINFECTION

For public areas that have come in contact with overflowed sewage, the Contractor will take reasonable action to implement disinfection procedures. Generally, these procedures will involve an application of an oxidizing agent such as a dilute chlorine solution on constructed surfaces (streets, driveways, walls, etc.) and a lime application on organic surfaces (lawns, soil areas, etc.). The level and extent of disinfection will be determined in the field. It is not the intent of this disinfection procedure to infer that total pathogen destruction has been achieved, nor that any other level of disinfection has been achieved.

* * * END OF SECTION 2 * * *

Sewerage and Water Board of New Orleans
Drug - Free Work Place Policy
Contractor Requirements
Page 1 of 3

ATTACHMENT TO GENERAL SPECIFICATIONS

STATEMENT OF POLICY

It is the policy of the Sewerage and Water Board of New Orleans that all work places associated with its operation, maintenance, improvements, and expansion be kept drug free. In order to insure this, the Sewerage and Water Board has approved the following drug testing policy to be implemented on this contract.

NOTICE

The contractor shall notify all personnel to be employed on this contract that they must submit to drug testing upon the occurrence of any accident, injury, or unsafe and hazardous incident which involves them. Agreement to submit to such drug testing shall be required for the employment of all personnel under this contract.

PENALTIES

Any employee who refuses to agree to testing under this policy or who refuses to be drug tested after the occurrence of any accident, injury or unsafe and hazardous incident which involves them, or who fails to report any such accident, injury or incident within twenty-four (24) hours of its occurrence, shall be deemed incompetent under Paragraph 47 of the General Specifications. Any employee found to have a positive test result after his conformational testing shall be deemed incompetent under Paragraph 47 of the General Specifications. Any employee deemed incompetent under these provisions shall be removed by the contractor from work under this contract and any other current Board contract.

TESTING PROCEDURE

The contractor shall while performing this contract, require any of its employees who are involved in an accident, injury or unsafe and hazardous incident while in the course and scope of their employment, whether vehicular or non-vehicular in nature, to be tested for blood alcohol or drug levels through a laboratory approved by the National Institute for Drug Abuse. Said employee shall provide a testing sample as soon as possible after such accident, injury or incident, but no longer than twenty-four (24) hours from the time of the occurrence. The contractor shall provide copies of the results of the initial testing on the samples involved to the Risk Manager of the Sewerage and Water Board of New Orleans as soon as such results are known. If the initial testing reveals a positive result, the contractor shall forward the remainder of the original testing sample to a second, conformational testing. The Sewerage and Water Board of New Orleans shall consider any result to be positive if it indicates any level which exceeds the levels set forth as follows:

CUT-OFF LEVELS INDICATING POSITIVE TEST RESULTS

The following initial cut-off levels shall be used when screening specimens to determine whether negative or positive:

	<u>Initial Test Level (ng/ml)</u>
Marijuana metabolites	50
Cocaine metabolites	300
Opiate metabolites	300
Phencyclidine (PCP, etc.)	25
Amphetamines	300
Alcohol	
.04% by weight based on grams of alcohol per 100cc of blood	
LSD	150
Barbiturates	300
Benzodiazepines	300

Quantitative GC/MS confirmation procedures at the following cut-off values shall be used for the following drugs:

	<u>Confirmatory Test Level (ng/ml)</u>
Marijuana metabolites*	10
Cocaine metabolites**	150
Opiates (Morphine, Codeine)	150
Phencyclidine (PCP, etc.)	25
Amphetamines (amphetamine, Methamphetamine)	300
LSD	150
Barbiturates	300
Benzodiazepines	300

* Delta-9-Tetrahydrocannabinol - 9-Carboxylic Acid

** Benzoyllecgonine

Drug-Free Workplace Policy
Sheet 3 of 3

The contractor shall choose the laboratory to be used for drug testing, and shall identify such laboratory to the Risk Manager of the Sewerage and Water Board prior to receiving approval to start work. All laboratories shall be approved by the National Institute for Drug Abuse.

The contractor shall notify the Board's Risk Manager immediately of the results of any conformational testing.

The Contractor's Senior Project Superintendent working in consultation and conjunction with the Board's Risk Manager and the Board's Engineer, shall determine whether an accident, injury or unsafe or hazardous incident occurred. The Safety Department of the Sewerage and Water Board reserves the right to investigate any such matter and make a complete report to the Executive Director of the Sewerage and Water Board whose decision shall be final.

The Sewerage and Water Board shall not be liable for any cause of action of any employee of the contractor brought against the contractor as a result of this policy. The Sewerage and Water Board shall not be liable for the contractor's failure to stipulate adherence to the terms and conditions of this drug testing policy as a condition of employment of any employee on this contract. The Board shall not release the contractor from his responsibilities under the policy unless failure to adhere to the conditions of this policy shall be a direct result of any action taken by the Board.

These requirements shall be acknowledged by signature of the contractor's authorized representative in the space provided in the "Form of Proposal".

Welcome

We welcome you to the S&WB and request your assistance in maintaining our Safety Standards. For the safety of yourself and everyone working at the S&WB, you are asked to observe the following safety precautions. When this notice has been read thoroughly, a senior representative of your company is required to distribute this information to all employees who will be affected. You may call the Board's Risk Management Department at (504) 585-2382 or the Board's Safety Manager, Mr. Keith Pete, at (504) 585-2522 if you have any questions.

Basic

1. Smoking will be allowed in designated areas only.
2. Horseplay, practical joking and fighting are positively prohibited.
3. The use or possession of illegal drugs or intoxicating beverages is strictly prohibited on all S&WB property.
4. Housekeeping is a must. We will keep our area safe and free from litter and expect you do to the same.
5. Handrails must always be used when going up and down ladders or stairs.
6. When working in confined spaces, the contractor must be in full compliance with Occupational Safety and Health Administration (OSHA) Standard # 29CFR 1910.146 at all times. Atmospheric conditions such as adequate ventilation, the presence of oxygen and the absence of explosive gases must be assured before working in voids, tanks, or other enclosed spaces.
7. Radios must be turned off.

Emergency

8. The S&WB Emergency Response Plan is a document, which provides specific notification instructions to be followed in case of hazardous material spills. The Board's Environmental Affairs Office phone number is 942-3855 during normal business hours 7:30 a.m. to 4:00 p.m.
9. The Board's 24-hour emergency lines are (504) 529-2837 and 865-0575 (Central Control Dispatcher, Carrollton Plant.)
10. Since Board contracts are performed under various circumstances at various locations, prior to beginning any work, the contractor should consult with the Board employee who is responsible for monitoring the contract in order to establish the most effective procedures for handling emergencies.

Transportation

Warning signals and lights shall be used as follows:

11. Rotating beacons shall be used if your vehicle is so equipped.
12. Tail lights / emergency flashers shall be used.
13. Orange reflector type safety cones shall be placed to give other motorists warning.
14. If vehicle is moving, backing, or parking, proper traffic control shall be exercised.

Protective Clothing and Equipment

15. All personnel who are exposed to eye hazards will wear safety glasses. Hard hats will be worn at all times while an employee is in the immediate vicinity of overhead hazards or while operating heavy equipment without a Rollover Protection Device.
16. Protective clothing and equipment such as rubber aprons and gloves, eye and face protection, approved respirators or dust masks will be worn when handling all harmful chemicals.

Reporting

17. Defective equipment, machinery, hazardous conditions, or unsafe work practices or conditions shall be reported immediately to your Supervisor / Foreman who will then contact proper S&WB personnel for corrections.
18. All injuries will be reported to the Risk Manager, (504) 585-2422, or to the Safety Unit, (504) 585-2522, regardless of how minor an injury may seem.
19. S&WB employees may hold safety meetings to discuss and promote safe working conditions and accident prevention. You may be asked to attend.

Work Smart

20. Stay alert at all times, know what is going on around you. Know the safe operating procedures concerned with your assigned duties. When your duties may influence the safety of Board employees, notify the employees and their supervisors first.
21. Vendor / Contractors shall at all times demonstrate strict compliance with all Federal, State and Local regulations regarding safety, including but not limited to, all relevant Department of Environmental Quality (DEQ), Department of Transportation (DOT), Environmental Protection Agency (EPA), and Occupational Safety and Health Act (OSHA) regulations.
22. The Vendor / Contractor will at the request of the Risk Manager and/ or Safety Manager remove any of his employees found to be creating or contributing to unsafe conditions.
23. The following items are not allowed on any S&WB Facility or jobsite:

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Safety Orientation Notice
Attachment No. 2 to Specifications

- Firearms and Ammunition
- Alcohol and illegal drugs

Sewerage & Water Board of New Orleans
Wage Rate Determination
Attachment No. 3 to Specifications

General Decision Number: LA140008 01/10/2014 LA8

Superseded General Decision Number: LA20130008

State: Louisiana

Construction Type: Building

Counties: Jefferson, Orleans, Plaquemines, St Bernard, St Charles, St James, St John the Baptist and St Tammany Counties in Louisiana.

BUILDING CONSTRUCTION PROJECTS (Does not include Treatment Plants or single family homes and apartments up to and including 4 stories)

Modification Number	Publication Date
0	01/03/2014
1	01/10/2014

* ELEC0130-006 12/01/2013

JEFFERSON, ORLEANS, PLAQUEMINES, ST. BERNARD, ST. CHARLES, ST. JAMES, AND ST. JOHN THE BAPTIST PARISHES

	Rates	Fringes
ELECTRICIAN (includes low voltage wiring and installation of fire alarms, security systems, sound and communication systems, telephones, computers, and temperature controls).....	\$ 29.35	9.51

ELEC1077-003 09/01/2012

ST. TAMMANY PARISH

	Rates	Fringes
ELECTRICIAN (includes low voltage wiring and installation of fire alarms, security systems, sound and communication systems, telephones, computers, and temperature controls).....	\$ 22.50	7.17

IRON0058-011 06/01/2013

JEFFERSON, ORLEANS, PLAQUEMINES, ST. BERNARD, ST. CHARLES, ST. JAMES (Southeastern Portion), ST. JOHN THE BAPTIST, and ST.

Sewerage & Water Board of New Orleans
Wage Rate Determination
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TAMMANY PARISHES

	Rates	Fringes
Ironworker, reinforcing and structural.....	\$ 19.60	7.97

IRON0623-007 10/01/2013		

ST. JAMES PARISH (Northwestern Portion)

	Rates	Fringes
IRONWORKER, STRUCTURAL AND REINFORCING.....	\$ 20.61	7.47

PAIN1244-001 05/01/2013		

	Rates	Fringes
PAINTER (includes brush; roller; spray; and drywall finishing).....	\$ 17.56	6.03

PAIN1244-002 03/01/2013		

	Rates	Fringes
Glazier.....	\$ 19.56	7.53

PLUM0060-007 06/03/2013		

JEFFERSON, ORLEANS, PLAQUEMINES, ST. BERNARD, ST. CHARLES, ST. JAMES (Southeastern Portion), ST. JOHN THE BAPTIST, AND ST. TAMMANY PARISHES

	Rates	Fringes
PIPEFITTER (excludes HVAC).....	\$ 27.48	10.80
PLUMBER (includes HVAC pipe and installation of system).....	\$ 27.48	10.80

* PLUM0198-007 01/01/2014		

ST. JAMES PARISH (Northwestern Portion)

	Rates	Fringes
PIPEFITTER (excludes HVAC).....	\$ 25.54	10.73
PLUMBER (includes HVAC pipe and installation of system).....	\$ 25.54	10.73

SFLA0669-003 07/01/2013		

Sewerage & Water Board of New Orleans
Wage Rate Determination
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	Rates	Fringes
SPRINKLER FITTER.....	\$ 26.22	14.37

SHEE0214-007 07/01/2009

	Rates	Fringes
Sheet Metal Worker (including HVAC Duct Work).....	\$ 24.54	9.65

SULA2004-003 03/25/2004

	Rates	Fringes
CARPENTER		
Drywall & Metal Stud Installation.....	\$ 14.00	0.70
Formbuilding/Formsetting....	\$ 12.70	0.56
All Other Work.....	\$ 13.68	0.00
Cement Mason/Concrete Finisher...	\$ 12.28	0.00
Laborers:		
Common.....	\$ 9.55	1.05
Mason Tender.....	\$ 9.32	0.00
Power Equipment Operator		
Backhoe/Excavator.....	\$ 14.00	0.42
Bulldozer.....	\$ 15.17	0.00
Crane.....	\$ 14.00	1.80
ROOFER (includes metal roof).....	\$ 12.28	0.00
Sheet Metal Worker (excluding HVAC duct).....	\$ 13.26	1.91

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

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Unlisted classifications needed for work not included within
the scope of the classifications listed may be added after
award only as provided in the labor standards contract clauses
(29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification
and wage rates that have been found to be prevailing for the
cited type(s) of construction in the area covered by the wage

Sewerage & Water Board of New Orleans
Wage Rate Determination
Attachment No. 3 to Specifications

determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters , PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable , i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rates.

0000/9999: weighted union wage rates will be published annually each January.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination

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Wage Rate Determination
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- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

SEWERAGE and WATER BOARD of NEW ORLEANS

Storm Water Pollution Prevention Plan (SWPPP) And Storm Water Best Management Practices (BMP) Requirements

GENERAL

1. The contractor shall prepare and maintain a Storm Water Pollution Prevention Plan (SWPPP), which describes in specific details the Contractor's program to prevent contamination of the storm water collection system for this project. A suggested SWPPP Templates and Sample Inspection Report, as well as other valuable information can be found at EPA's website <http://cfpub.epa.gov/npdes/stormwater/swppp.cfm>.
2. Contractor shall implement, maintain, inspect and remove all erosion and sediment controls identified in the SWPPP. The program shall address both common construction activities and extraordinary events.
3. Contractor shall include Water Pollution Control Drawings (WPCD) in the SWPPP to illustrate the locations, applications and deployment of Best Management Practices (BMPs) identified in the SWPPP. The WPCDs shall be included as an attachment to the SWPCP.
4. Best Management Practices (BMPs): A Best Management Practice is a technique, process, activity, or structure used to reduce the pollutant content of a storm water or non-storm water discharge. BMPs may include simple, non-structural methods such as good housekeeping, staff training, and preventive maintenance. Additionally, BMPs may include structural modifications such as the installation of berms, canopies or treatment control
5. The Contractor shall comply with laws, rules, and regulations of the State of Louisiana and agencies of the United States Government prohibiting the pollution of lakes, wetlands, streams, or river waters from the dumping of contaminants, refuse, rubbish or debris.
6. The contractor shall submit copies of the SWPPP (as per requirement of Section 2, Paragraph 2-20) a minimum of 10 working days prior to beginning construction, to the Engineer. **Construction shall not begin until the SWPPP is approved.** Contractor shall update the SWPPP as necessary during the work to prevent contamination of the storm water collection system.
7. Before start of work, Contractor shall train all employees and subcontractors on the approved SWPPP and related WPCD and provide the Sewerage and Water Board with written documentation of said training.
8. Suggested BMPs can be obtained from Ella Barbe, LA DEQ Small Business Assistance Program, 201 Evans Rd. Bldg. 4, Suite 420 Harahan LA. Phone 504-736-7739, e-mail: ella.barbe@la.gov

CONSTRUCTION

The contractor shall keep a copy of the SWPPP on the job site. The contractor shall provide continuously at the jobsite all the tools, equipment, and materials necessary to implement the SWPPP at all times from project initiation through completion, including any punchlist or warranty work on the project. At a minimum the following requirements shall be met as applicable, to the maximum extent practicable, at construction sites:

1. **Storm Drain System Protection:** At the first order of work, the Contractor shall protect the existing storm drain system from entrance of construction debris and pollutants. Such protection shall include implementing the BMPs as outlined in the SWPPP. Protection shall prohibit the discharge of untreated runoff from temporary or permanent street maintenance/landscape maintenance material and waste storage areas from entering the storm drain system. Sediment that is generated on the project site shall be retained using structural drainage controls. In addition, the protection system shall have a minimum of three features: 1) a particulate filter of geosynthetic material securely fastened in place such that it cannot be bypassed without significant physical damage; 2) a prefilter for the particulate filter; and 3) on-hand materials to close off the inlet or opening in the case of a significant pollution spill. Contractor shall monitor and maintain all storm drain inlet protection devices during rain events to prevent flooding.
2. **Material Management & Storage:** No construction-related materials, wastes, spills or residues shall be discharged from the project site to streets, drainage facilities or adjacent properties by wind or runoff. All materials and/or equipment storage areas where liquid construction materials are placed shall be protected by a physical barrier capable of containing the entire volume of stored liquid materials. During active construction activities, portions of the barrier may be removed for access. However, the barrier materials must be readily accessible for replacement by onsite construction personnel. The barrier must be in place at all times during the absence of Contractor personnel at the storage site. Building materials shall be placed on pallets and covered in event of rain. Do not store materials in the street or gutter area.
3. **Equipment & Vehicle Maintenance:** Non-storm water runoff from equipment and vehicle washing and any other activity shall be contained at the project site and shall not be allowed to discharge from the project site to streets, drainage facilities or adjacent properties by wind or runoff. The Contractor shall inspect vehicles and equipment on each day of use. Leaks shall be repaired off-site if possible. If necessary to repair on site, the runoff must be contained or the problem vehicle or equipment shall be removed from the project site until repaired. If necessary, drip pans shall be placed under the vehicles or equipment while not in use to catch and/or contain drips and leaks.
4. **BMP Inspection:** The contractor shall inspect all pollution control BMPs regularly. The Contractor shall also repair/replace any damaged or clogged element on a daily basis. During periods of precipitation where any runoff occurs, the system shall be checked twice a day, seven days a week, whether or not any work has been performed. The daily checks shall be between 6 a.m. and 9 a.m., and 4 p.m. to 8 p.m. The contractor shall keep a monitoring inspection log of each inspection.
5. **Spill Prevention & Cleanup Plan:** Contractor shall have a spill prevention plan and spill cleanup materials readily available and addressed in the SWPPP. Spills shall be cleaned

up immediately using dry methods if possible. Spill cleanup material shall be properly disposed off site. Contractor shall keep a record of any spills in the inspection log. In addition, at the end of the project, the Contractor must certify that all contaminated materials have been properly disposed in accordance with the SWPPP.

6. **Asphalt & Concrete Activities:** Asphalt and concrete activities shall be scheduled for dry weather. Contractor shall prohibit saw cutting during a storm event of 0.25 inches or greater. Store bags of cement away from gutters and storm drains, sealed and covered, protected from rainfall runoff and wind. Place tarp under cement mixer before operating to catch spills. Never dispose of cement washout or concrete dust onto driveways, streets, gutters or storm drains.
7. **Sidewalk Washing:** The following methods should be utilized to prevent discharge of sidewalk cleaning wastewater into the storm drain system:
 - a. Sweep and pick up all areas to be cleaned before using water.
 - b. Manually scrape gum from sidewalks and other surfaces.
 - c. Must use high pressure and low volume of water with no additives and at an average usage of 0.006 gallons per square foot of surface area to be rinsed.
 - d. Use a wet/dry vacuum to collect wash water for disposal. Large volumes of wash water may require the use of a small sump pump to remove wash water from the job site.
 - e. One or more of the following methods are recommended to prevent pollutants from entering the storm drain system:
 - Sandbags can be used to create a barrier around storm drains. *
 - Rubber mats or plugs can be used to seal drain openings. *
 - Temporary berms or containment pads help keep water on site. *
 - Use berms of sandbags to direct wash water to landscaping. *
 - Use large squeegees to accumulate sheet flow for collection.* Remember to remove plugs, berms, and sandbags or you may be liable for possible flooding.
 - f. Wash water that may contain hazardous waste such as oil-saturated absorbents, water with lead or other heavy metals from oxidized paint, and solvent cleaners requires special treatment and must be disposed of through a hazardous waste facility.
8. **Employee BMP Training:** Contractor shall train employees and subcontractors on BMP implementation, general good housekeeping, and proper spill containment and cleanup. Before start of work, Contractor shall provide the Board with written documentation of training and keep all documentation in the SWPCP.
9. **Inspection:** Contractor shall inspect and repair or replace, as needed, all job site BMPs a minimum of:
 - Biweekly
 - Before, during and after a major rain event.Contractor shall document the inspections in the SWPPP.
10. **Dewatering:** Avoid dewatering discharges where possible by using the water for dust control, infiltration, etc..

SECTION 3
TECHNICAL SPECIFICATIONS

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. Section Includes:
 - 1. Demolition and removal of selected portions of building or structure.
 - 2. Demolition and removal of selected site elements.
 - 3. Salvage of existing items to be reused or recycled.
- B. See related Section 02850 "Removal and Disposal of Material with Mold".

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. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 PREINSTALLATION MEETINGS

- A. Pre-demolition Conference: Conduct conference at Project site.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Pre-demolition Photographs or Video: Submit before Work begins.
- C. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician.

1.6 CLOSEOUT SUBMITTALS

- A. Landfill Records: Indicate receipt and acceptance of waste by a landfill facility licensed to legally accept waste.

1.7 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.8 FIELD CONDITIONS

- A. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- B. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- C. Storage or sale of removed items or materials on-site is not permitted.
- D. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.9 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- D. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
- E. Survey of Existing Conditions: Record existing conditions by use of measured drawings and preconstruction photographs.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 2. Arrange to shut off indicated utilities with utility companies.
 - 3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
- C. Refrigerant: Remove refrigerant from mechanical equipment to be selectively demolished according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 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.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- 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.

3.4 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. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 5. Dispose of demolished items and materials promptly.
- B. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.
- C. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. 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 or noted 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.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, 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. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- 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 SECTION 01732

SECTION 02821

CHAIN-LINK FENCES AND GATES

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. Section includes chain-link fences and gates intended for repair and replacement of existing damaged materials.

1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design cantilevered slide gates, chain-link fences and gates, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Chain-link fence and gate framework shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7:
 - 1. Minimum Post Size: Determine according to ASTM F 1043 for framework up to 12 feet (3.66m) high, and post spacing to match existing and new not to exceed 10 feet (3 m).

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated
- B. Shop Drawings: Include plans, elevations, sections, details, hinges, latches, roller assemblies, anchors, hardware and attachments to other work.
- C. Product Certificates: For each type of chain-link fence and gate, from manufacturer.
- D. Product Test Reports: For framing strength according to ASTM F 1043.
- E. Operation and maintenance data.

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, deterioration of metals, metal finishes, and other materials beyond normal weathering.
2. Warranty Period: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE FABRIC

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with CLFMI Product Manual and with requirements indicated below:
1. Fabric Height: As indicated on Drawings.
 2. Steel Wire Fabric: Wire with a diameter of 0.192 inch (4.88 mm).
 - a. Mesh Size: 2 inches (50 mm).
 - b. Zinc-Coated Fabric: ASTM A 392, Type II, Class 1, 1.2 oz./sq. ft. (366 g/sq. m) with zinc coating applied before weaving.
 3. Selvage: Knuckled at both selvages top and bottom.

2.2 FENCE FRAMING

- A. Posts and Rails: Comply with ASTM F 1043 for framing, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 or ASTM F 1083 based on the following:
1. Fence Height: As indicated on Drawings or to match existing.
 2. Light Industrial Strength: Material Group IC-L, round steel pipe, electric-resistance-welded pipe.
 - a. Line Post: As indicated on Drawings or to match existing.
 - b. End, Corner and Pull Post: As indicated on Drawings or to match existing.
 3. Horizontal Framework Members: Intermediate, top and bottom rails complying with ASTM F 1043.
 4. Brace Rails: Comply with ASTM F 1043.
 5. Metallic Coating for Steel Framing:
 - a. Type A zinc coating.

2.3 TENSION WIRE

- A. Metallic-Coated Steel Wire: 0.177-inch- (4.5-mm-) diameter, marcelled tension wire complying with ASTM A 817 and ASTM A 824, with the following metallic coating:
1. Type II, zinc coated with minimum coating weight matching chain-link fabric coating weight.

2.4 CANTILEVER SLIDE GATE

A. Frame Assembly:

1. Fabricate gate in accordance with ASTM F 1184, Type II, class I, member sizes as indicated on drawings or to match existing.
2. Frame Corner Construction: Assembled with corner fittings to match existing.

B. Gate Size Provisions:

1. Gate Leaf Size: Cantilever support overhangs equal to existing. Verify sufficient bracing support with overall panel width with gate opening size and cantilever support prior to executing repair.
 - a. Provide an additional 2 3/8-inch diameter lateral and diagonal support rails adjacent to top horizontal rail, minimum sch. 40 pipe.
 - b. Bottom rail shall match existing to be replaced.

2.5 SWING GATES

A. General: Comply with ASTM F 900 for gate posts and double swing gate types.

1. Gate Leaf Width: As indicated on Drawings or to match existing.
2. Gate Fabric Height: As indicated on Drawings or to match existing.

B. Pipe and Tubing:

1. Zinc-Coated Steel: Comply with ASTM F 1043 and ASTM F 1083; protective coating and finish to match fence framing.
2. Gate Posts: Round tubular steel.
3. Gate Frames and Bracing: Round tubular steel.

C. Frame Corner Construction: Assembled with corner fittings.

D. Hardware:

1. Hinges: 180-degree outward swing.
2. Latches permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate.
3. Closer: Manufacturer's standard.

2.6 BARBED WIRE

A. Steel Barbed Wire: Comply with ASTM A 121, for two-strand barbed wire, 0.099-inch- (2.51-mm-) diameter line wire with 0.080-inch- (2.03-mm-) diameter, four-point round barbs spaced not more than 5 inches (127 mm) o.c.

1. Zinc Coating: Type Z, Class 3.

2.7 FITTINGS

- A. General: Comply with ASTM F 626.
- B. Finish:
 - 1. Metallic Coating for Pressed Steel: Not less than 1.2 oz. /sq. ft. (366 g /sq. m) zinc.

2.8 CONCRETE, GROUT AND ANCHORING CEMENT

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 - 1. Footings: Proportion normal-weight concrete mixture as follows:
 - a. Minimum Compressive Strength: 3000 psi (20.7 MPa) at 28 days.
 - b. Maximum Water-Cementitious Materials Ratio: 0.58.
 - c. Slump Limit: 4 inches (100 mm) plus or minus 1 inch (25 mm).
 - d. Minimum Cementitious Materials Content: 470 lb/cu. Yd. (279 kg/cu. m).
- B. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.
- C. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements indicated.
- D. Practice for repair of damaged and uncoated areas to comply with ASTM A780.
- E. Post Excavation: Excavate holes for posts to diameters and spacing indicated.
- F. Post Setting: Set posts in concrete at indicated spacing.
 - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 - 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.

- a. Concealed Concrete: Top 2 inches (50 mm) below grade allow covering with surface material.
 - b. Posts Set into Voids in Concrete: Form or core drill holes not less than 5 inches (125 mm) deep and 3/4 inch (20 mm) larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.
- G. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more.
- H. Line Posts: Space line posts uniformly at 10 feet (3 m) o.c.
- I. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Provide horizontal tension wire at the following locations:
- 1. Extended along top and bottom of fence fabric.
- J. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1 inch (25.4 mm) between finish grade or surface and bottom selvage unless otherwise indicated.
- K. Install all gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

END OF SECTION 02821

SECTION 02850

REMOVAL AND DISPOSAL OF MATERIALS WITH MOLD

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 DESCRIPTION

- A. This section specifies removal and disposal of materials with mold and the controls needed to limit occupational and environmental exposure. CMU block, insulation, ceiling tiles, and gypsum wall board in various rooms are suspected to harbor mold growth.

1.2 RELATED WORK

- A. Section 01732, "Selective Demolition".

1.3 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.
- B. Code of Federal Regulations (CFR):
 - CFR 29 Part 1910Occupational Safety and Health Standards
 - CFR 29 Part 1926Safety and Health Regulations for Construction
 - CFR 40 Part 261Identification and Listing of Hazardous Waste
 - CFR 40 Part 262Standards Applicable to Generators of Hazardous Waste
 - CFR 40 Part 263Standards Applicable to Transporters of Hazardous Waste
 - CFR 49 Part 172Hazardous Material Table, Special Provisions, Hazardous Material Communications, Emergency Response Information, and Training Requirements
 - CFR 49 Part 178Specifications for Packaging
- C. American National Standards Institute
 - Z88.2-1992.....Respiratory Protection

1.4 QUALITY ASSURANCE

- A. Before exposure to mold, provide workers with training in mold handling, appropriate PPE, and instruction in use of PPE.

- B. Responsibilities: The Contractor shall take the following actions before and during operations in which workers are in contact with mold:
1. Review and approve mold removal plan for conformance to the applicable referenced standards. No demolition shall proceed until the Mold Removal Plan has been approved.
 2. Direct and oversee mold removal work for conformance with the approved plan.
 3. Ensure work is performed in strict accordance with specifications at all times.
 4. Ensure hazardous exposure to personnel and to the environment is adequately controlled at all times.
- C. Training: Train each employee performing mold removal and disposal
- D. Training Certification: Submit certificates signed and dated by the Qualified Instructor and by each employee stating that the employee has received training.
- E. Respiratory Protection Program:
1. Furnish each employee required to wear a filter respirator or other appropriate type with such equipment. Respirator to be N95 or better.
- F. Hazard Communication Program: Establish and implement a Hazard Communication Program as required by 29 CFR 1910.1200.
- G. Hazardous Waste Management: The Hazardous Waste Management plan shall comply with applicable requirements of Federal, State, and local hazardous waste regulations and address:
1. Identification of hazardous wastes associated with the work.
 2. Estimated quantities of wastes to be generated and disposed of.
 3. Names and qualifications of each contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location and a 24-hour point of contact
 4. Names and qualifications (experience and training) of personnel who will be working on-site with hazardous wastes.
 5. List of waste handling equipment to be used in performing the work, to include cleaning and equipment.
 6. Work plan and schedule for waste containment, removal and disposal. Wastes shall be cleaned up and containerized daily.
- H. Safety and Health Compliance:
1. In addition to the detailed requirements of this specification, comply with laws, ordinances, rules, and regulations of federal, state, and local authorities regarding removing, handling, storing, transporting, and disposing of mold containing waste materials..
 2. Where specification requirements and the referenced documents vary, the most stringent requirements shall apply.

3. The following local laws, ordinances, criteria, rules and regulations regarding removing, handling, storing, transporting, and disposing of lead-contaminated materials apply:
 - I. Pre-Construction Conference: Meet with the Engineer to discuss in detail the mold removal work plan, including work procedures and precautions for the work plan. No work demolition shall take place until the Engineer has approved the Mold Removal Work Plan.

1.5 SUBMITTALS

- A. Manufacturer's Catalog Data:
 - Containment materials
 - Respirators
 - Disposable Personal Protective Suits
- B. Statements Certifications and Statements:
 1. Mold Removal Work Plan:
 - a. Submit a detailed job-specific plan of the work procedures to be used in the removal of mold-containing material.
 - b. Include in the plan, eating, drinking, smoking and restroom procedures, collected mold containing material disposal plan, respirators, protective equipment, and a detailed description of the method of containment of the operation to ensure that mold does not become airborne.
 2. Records:
 - a. Completed and signed hazardous waste manifest from treatment or disposal facility.
 - b. Employee training certification.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PROTECTION

- A. Personnel Protection: Personnel shall wear and use protective clothing and equipment as specified herein. Eating, smoking, or drinking is not permitted in the control area. No one will be permitted in the control area unless they have been given appropriate training and protective equipment.
- B. Warning Signs: Provide warning signs at approaches to mold control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Signs shall comply with the requirements of 29 CFR 1926.200.

3.2 WORK PROCEDURES

- A. Perform removal of mold-containing materials in accordance with the approved Mold Removal Work Plan. Use procedures and equipment required to limit occupational and environmental exposure. Dispose of removed mold containing materials and associated waste in compliance with Environmental Protection Agency (EPA), federal, state, and local requirements.
- B. Personnel Exiting Procedures:
 - 1. Whenever personnel exit the mold control area, they shall perform the following procedures and shall not leave the work place wearing any clothing or equipment worn during the work day:
 - a. Vacuum themselves off.
 - b. Remove protective clothing in the decontamination area, and place them in an approved impermeable disposal bag.
 - c. Shower.
 - d. Change to clean clothes prior to leaving the physical boundary designated around the contaminated job site.
- C. Monitoring During Mold Removal Work:
 - 1. Perform personal and area monitoring during the entire mold removal operation. Sufficient area monitoring shall be conducted at the physical boundary to ensure unprotected personnel are not exposed.
 - 2. Conduct area monitoring on a continuous basis whenever mold removal operations are performed.

3.3 MOLD-CONTAINING MATERIAL REMOVAL

- A. Remove all mold containing material taking precautions to treat all material as contaminated if mold contamination is observed in any of the material
- B. Remove insulation so as to minimize contamination of work. The removal process should be described in the Mold removal Work Plan.
- C. Collect and bag contaminated materials and used PPE for disposal in accordance with EPA, state and local requirements.

3.4 CLEANUP AND DISPOSAL

- A. Cleanup: Keep the mold control area free of accumulations of removed material. Restrict the spread of dust and debris; keep waste from being distributed over the work area. Do not dry sweep or use compressed air to clean up the area. At the end of each shift and when the mold removal operation has been completed, spray the area with an approved moldicide.

- B. Certification: The Contractor shall certify in writing that the respiratory protection for the employees was adequate, the work procedures were performed in accordance with the mold containing material removal plan, that there were no visible accumulations of mold and dust on the worksite, and that the site was properly disinfected at the conclusion of mold removal operations.
- C. Do not remove the mold control area or roped-off boundary and warning signs prior to the Engineer's receipt of the Contractors certification.
- D. Disposal:
 - 1. Collect mold-contaminated waste, scrap, debris, bags, containers, equipment, PPE, and clothing on a daily basis.
 - 2. Store collected material above in weatherproof and air tight confinement awaiting disposal.
 - 3. Dispose according to EPA, federal, state, and local requirements in an approved landfill licensed to accept mold contaminated materials.
- E. Disposal Documentation: Submit written evidence that the hazardous waste treatment, storage, or disposal facility (TSD) is approved for mold containing material disposal by the EPA and state or local regulatory agencies. Submit one copy of the completed manifest, signed and dated by the initial transporter in accordance with 40 CFR 262.

END OF SECTION 02850

SECTION 03930

CONCRETE REHABILITATION

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. Section Includes:
 - 1. Removal of deteriorated concrete and subsequent patching.
 - 2. Floor joint repair.
 - 3. Epoxy crack injection.
 - 4. Corrosion-inhibiting treatment.
 - 5. Polymer sealers.

1.3 UNIT PRICES

- A. General: Unit prices include the cost of preparing existing construction to receive the work indicated.
- B. Concrete Removal and Patching: Work will be paid for by the cubic foot computed on the basis of rectangular solid shapes approximating the actual shape of concrete removed and patched with average depths, widths, and lengths, measured to the nearest inch.
- C. Epoxy Crack Injection: Work will be paid for by the linear foot of crack injected.

1.4 PREINSTALLATION MEETINGS

- A. Pre-installation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: Cured samples for each exposed product and for each color and texture specified.

1.6 INFORMATIONAL SUBMITTALS

- A. Material certificates.

- B. Product test reports.
- C. Field quality-control reports.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer to apply packaged patching-mortar materials, epoxy crack injection materials, corrosion-inhibiting treatments and polymer sealers.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Source Limitations: Obtain each color, grade, finish, type, and variety of product from single source with resources to provide products of consistent quality in appearance and physical properties.

2.2 BONDING AGENTS

- A. Epoxy-Modified, Cementitious Bonding and Anticorrosion Agent: Manufactured product that consists of water-insensitive epoxy adhesive, Portland cement, and water-based solution of corrosion-inhibiting chemicals that forms a protective film on steel reinforcement.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Construction Chemicals - Building Systems; Emaco P24.
 - b. Euclid Chemical Company (The), an RPM company; Duralprep A.C.
 - c. Kaufman Products, Inc.; Surepoxy HM EPL.
 - d. Sika Corporation, Construction Product Division; Armatec 110 EpoCem.
 - e. Sto Corp., Concrete Restoration Division; Sto Bonding and Anti-Corrosion Agent.
- B. Epoxy Bonding Agent: ASTM C 881/C 881M, Type V.
 - 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:
 - a. BASF Construction Chemicals - Building Systems.
 - b. ChemCo Systems.
 - c. Dayton Superior Corporation.
 - d. Euclid Chemical Company (The); an RPM company.
 - e. Kaufman Products, Inc.
 - f. Sika Corporation; Construction Product Division.
 - g. Sto Corp., Concrete Restoration Division.
 - h. Unitex.
 - i. US SPEC; Division of US MIX Products Company.
 - j. W. R. Meadows, Inc.

- C. Latex Bonding Agent: ASTM C 1059/C 1059M, Type II at structural and exterior locations and where indicated, Type I at other locations.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Latex Bonding Agent, Type I (Redispersible):
 - 1) Dayton Superior Corporation; Superior Concrete Bonder (J-41).
 - 2) Euclid Chemical Company (The), an RPM company; Euco Weld.
 - 3) Kaufman Products, Inc.; Sureweld.
 - 4) US SPEC, Division of US MIX Products Company; Bondcoat PVA.
 - 5) W. R. Meadows, Inc.; Intralok.
 - b. Latex Bonding Agent, Type II (Non-Redispersible):
 - 1) Dayton Superior Corporation; Conspec Strong Bond.
 - 2) Euclid Chemical Company (The), an RPM company; Akkro-7T.
 - 3) Kaufman Products, Inc.; Surebond.
 - 4) US SPEC, Division of US MIX Products Company; US Spec Acrylcoat.
 - 5) W. R. Meadows, Inc.; Sealtight Acry-Lok.

2.3 PATCHING MORTAR

- A. Patching Mortar, General:
1. Only use patching mortars that are recommended by manufacturer for each applicable horizontal, vertical, or overhead use orientation.
 2. Color and Aggregate Texture: Provide patching mortar and aggregates of colors and sizes necessary to produce patching mortar that matches existing, adjacent, exposed concrete.
 3. Coarse Aggregate for Patching Mortar: ASTM C 33, washed aggregate, Size No. 8, Class 5S. Add to patching-mortar mix only as permitted by patching-mortar manufacturer.
- B. Cementitious Patching Mortar: Packaged, dry mix for repair of concrete.
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:
 - a. BASF Construction Chemicals - Building Systems.
 - b. CGM, Incorporated.
 - c. Dayton Superior Corporation.
 - d. Euclid Chemical Company (The); an RPM company.
 - e. Fox Industries, Inc.
 - f. Kaufman Products, Inc.
 - g. Sika Corporation; Construction Product Division.
 - h. Sto Corp.; Concrete Restoration Division.
 - i. Unitex.
 - j. US SPEC; Division of US MIX Products Company.
 - k. W. R. Meadows, Inc.

2. Compressive Strength: Not less than 4000 psi (27.6 MPa) at 28 days when tested according to ASTM C 109/C 109M.
- C. Polymer-Modified, Cementitious Patching Mortar: Packaged, dry mix for repair of concrete and that contains a non-redispersible latex additive as either a dry powder or a separate liquid that is added during mixing.
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:
 - a. AQUAFIN, Inc.
 - b. BASF Construction Chemicals - Building Systems.
 - c. CGM, Incorporated.
 - d. Cortec Corporation.
 - e. Dayton Superior Corporation.
 - f. Euclid Chemical Company (The); an RPM company.
 - g. Fox Industries, Inc.
 - h. Kaufman Products, Inc.
 - i. Sika Corporation; Construction Product Division.
 - j. Sto Corp.; Concrete Restoration Division.
 - k. US SPEC; Division of US MIX Products Company.
 - l. W. R. Meadows, Inc.
 2. Compressive Strength: Not less than 4000 psi (27.6 MPa) at 28 days when tested according to ASTM C 109/C 109M.

2.4 JOINT FILLER

- A. Epoxy Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A Shore durometer hardness of at least 80 according to ASTM D 2240.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Construction Chemicals - Building Systems; Masterfill 300i.
 - b. ChemCo Systems; CCS Grout.
 - c. Dayton Superior Corporation; Poxylite (J-52).
 - d. Euclid Chemical Company (The), an RPM company; Euco 800.
 - e. Kaufman Products, Inc.; Surepoxy Flexijoint.
 - f. Metzger/McGuire; MM-80.
 - g. Sika Corporation, Construction Product Division; Sikadur 51 NS.
 - h. Unitex; Pro-Flex.
 - i. US SPEC, Division of US MIX Products Company; SR 50 - EJF.
 - j. W. R. Meadows, Inc.; Sealtight Rezi-Weld Flex.
- B. Color: Matching existing joint filler.

2.5 EPOXY CRACK-INJECTION MATERIALS

- A. Epoxy Crack-Injection Adhesive: ASTM C 881/C 881M, Type IV at structural locations and where indicated, Type I at other locations.

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:
 - a. BASF Construction Chemicals - Building Systems.
 - b. ChemCo Systems.
 - c. Dayton Superior Corporation.
 - d. Euclid Chemical Company (The); an RPM company.
 - e. Kaufman Products, Inc.
 - f. Sika Corporation; Construction Product Division.
 - g. Sto Corp.; Concrete Restoration Division.
 - h. Unitex.
 - i. US SPEC; Division of US MIX Products Company.
 - j. W. R. Meadows, Inc.
2. Capping Adhesive: Product manufactured for use with crack injection adhesive by same manufacturer.

2.6 OTHER MATERIALS

- A. Corrosion-Inhibiting Treatment: Waterborne solution of alkaline corrosion-inhibiting chemicals for concrete-surface application that penetrates concrete by diffusion and forms a protective film on steel reinforcement.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cortec Corporation; MCI 2020 Series.
 - b. Euclid Chemical Company (The), an RPM company; Duralprep 3020.
 - c. Evonik Degussa Corporation; Protectosil CIT.
 - d. Fox industries, Inc.; FX-361 Migratory Corrosion Inhibitor.
 - e. Sika Corporation, Construction Product Division; Sika FerroGard 903.
 - f. Sto Corp., Concrete Restoration Division; Sto Migratory Corrosion Inhibitor CR247.
- B. Polymer Sealer: Low-viscosity epoxy penetrating sealer and crack filler recommended by manufacturer for penetrating and sealing cracks in exterior concrete traffic surfaces.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Epoxy Sealers:
 - 1) BASF Construction Chemicals - Building Systems; EpoXeal GS.
 - 2) ChemCo Systems; Epoxy Healer Sealer.
 - 3) Euclid Chemical Company (The), an RPM company; Euco #512 VOC Epoxy Sealer.
 - 4) Sika Corporation, Construction Product Division; Sikadur 55 SLV.
 - 5) Unitex; Pro-Poxy 50-1.
 - 6) US SPEC, Division of US MIX Products Company; Eposeal LVS.
- C. Portland Cement: ASTM C 150, Type I, II, or III unless otherwise indicated.

2.7 MIXES

- A. General: Mix products, in clean containers, according to manufacturer's written instructions.
- B. Dry-Pack Mortar: Mix patching-mortar dry ingredients with just enough liquid to form damp cohesive mixture that can be squeezed by hand into a ball but is not plastic.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Notify Architect seven days in advance of dates when areas of deteriorated or delaminated concrete and deteriorated reinforcing bars will be located.
- B. Locate areas of deteriorated or delaminated concrete using hammer or chain-drag sounding and mark boundaries. Mark areas for removal by simplifying and squaring off boundaries. At columns and walls make boundaries level and plumb unless otherwise indicated.
- C. Pachometer Testing: Locate at least three reinforcing bars using a pachometer, and drill test holes to determine depth of cover. Calibrate pachometer using depth of cover measurements, and verify depth of cover in removal areas using pachometer.
- D. Perform surveys as the Work progresses to detect hazards resulting from concrete-maintenance work.

3.2 PREPARATION

- A. Ensure that supervisory personnel are on-site and on duty when concrete maintenance work begins and during its progress.
- B. Preparation for Removal of Deteriorated Concrete: Make explorations, probes, and inquiries as necessary to determine condition of construction to be removed in the course of repair.
 - 1. Verify that affected utilities have been disconnected and capped.
 - 2. Provide and maintain shoring, bracing, and temporary structural supports as required to preserve stability and prevent unexpected or uncontrolled movement, settlement, or collapse of construction being demolished and construction and finishes to remain.
- C. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from concrete maintenance work.
 - 1. Comply with each product manufacturer's written instructions for protections and precautions.
 - 2. Contain dust and debris generated by concrete maintenance work and prevent it from reaching the public or adjacent surfaces.
 - 3. Protect floors and other surfaces along haul routes from damage, wear, and staining.
 - 4. Provide supplemental sound-control treatment to isolate removal and dismantling work from other areas of the building.
 - 5. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.

- D. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify Architect immediately of inadequate drainage or blockage. Do not begin work in an area until the drainage system is in working order.
1. Prevent solids such as aggregate or mortar residue from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from concrete maintenance work.
 2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.
- E. Concrete Removal:
1. Provide shoring, bracing, and supports as necessary. Strengthen or add new supports when required during progress of removal work. Do not overload structural elements with debris.
 2. Saw-cut perimeter of areas indicated for removal to a depth of at least 1/2 inch (13 mm). Make cuts perpendicular to concrete surfaces and no deeper than cover on reinforcement.
 3. Remove deteriorated and delaminated concrete by breaking up and dislodging from reinforcement.
 4. Remove additional concrete if necessary to provide a depth of removal of at least 1/2 inch (13 mm) over entire removal area.
 5. Where half or more of the perimeter of reinforcing bar is exposed, bond between reinforcing bar and surrounding concrete is broken, or reinforcing bar is corroded, remove concrete from entire perimeter of bar and to provide at least a 3/4-inch (19-mm) clearance around bar.
 6. Test areas where concrete has been removed by tapping with hammer, and remove additional concrete until unsound and unbonded concrete is completely removed.
 7. Provide surfaces with a fractured profile of at least 1/8 inch (3 mm) that are approximately perpendicular or parallel to original concrete surfaces. At columns and walls, make top and bottom surfaces level unless otherwise directed.
 8. Thoroughly clean removal areas of loose concrete, dust, and debris.
- F. Reinforcing-Bar Preparation: Remove loose and flaking rust from reinforcing bars by wire brushing until only tightly adhered light rust remains.
1. Where section loss of reinforcing bar is more than 25 percent, or 20 percent in two or more adjacent bars, cut bars and remove and replace. Remove additional concrete as necessary to provide at least 3/4-inch (19-mm) clearance at existing and replacement bars. Splice replacement bars to existing bars according to ACI 318 (ACI 318M) by lapping, welding, or using mechanical couplings.
- G. Preparation of Floor Joints for Repair: Saw-cut joints full width to edges and depth of spalls, but not less than 3/4 inch (19 mm) deep. Clean out debris and loose concrete; vacuum or blow clear with compressed air.

3.3 APPLICATION

- A. General: Comply with manufacturer's written instructions and recommendations for application of products, including surface preparation.
- B. Epoxy-Modified, Cementitious Bonding and Anticorrosion Agent: Apply to reinforcing bars and concrete according to manufacturer's written instructions. Apply to reinforcing bars in two coats,

- C. Epoxy Bonding Agent: Apply to reinforcing bars and concrete according to manufacturer's written instructions, leaving no pinholes or other uncoated areas. Place patching mortar while epoxy is still tacky. If epoxy dries, recoat before placing patching mortar.
- D. Latex Bonding Agent, Type I: Apply to concrete by brush roller or spray. Allow to dry before placing patching mortar.
- E. Latex Bonding Agent, Type II: Mix with portland cement and scrub into concrete surface according to manufacturer's written instructions. Place patching mortar while bonding agent is still wet. If bonding agent dries, recoat before placing patching mortar.
- F. Slurry Coat for Cementitious Patching Mortar: Wet substrate thoroughly and then remove standing water. Scrub a slurry of neat patching mortar mixed with latex bonding agent into substrate, filling pores and voids.
- G. Placing Patching Mortar: Place as follows unless otherwise recommended in writing by manufacturer:
 - 1. Provide forms where necessary to confine patch to required shape.
 - 2. Wet substrate and forms thoroughly and then remove standing water.
 - 3. Pretreatment: Apply specified bonding agent.
 - 4. General Placement: Place patching mortar by troweling toward edges of patch to force intimate contact with edge surfaces. For large patches, fill edges first and then work toward center, always troweling toward edges of patch. At fully exposed reinforcing bars, force patching mortar to fill space behind bars by compacting with trowel from sides of bars.
 - 5. Lifts: Place material in lifts of not more nor less than thickness recommended by manufacturer. Do not feather edge.
 - 6. Consolidation: After each lift is placed, consolidate material and screed surface.
 - 7. Multiple Lifts: Where multiple lifts are used, score surface of lifts to provide a rough surface for placing subsequent lifts. Allow each lift to reach final set before placing subsequent lifts.
 - 8. Finishing: Allow surfaces of lifts that are to remain exposed to become firm and then finish to a surface matching adjacent concrete.
 - 9. Curing: Wet-cure cementitious patching materials, including polymer-modified cementitious patching materials, for not less than seven days by water-fog spray or water-saturated absorptive cover.
- H. Dry-Pack Mortar: Use for deep cavities. Place as follows unless otherwise recommended in writing by manufacturer:
 - 1. Provide forms where necessary to confine patch to required shape.
 - 2. Wet substrate and forms thoroughly and then remove standing water.
 - 3. Pretreatment: Apply specified bonding agent.
 - 4. Place dry-pack mortar into cavity by hand, and compact tightly into place. Do not place more material at a time than can be properly compacted. Continue placing and compacting until patch is approximately level with surrounding surface.
 - 5. After cavity is filled and patch is compacted, trowel surface to match profile and finish of surrounding concrete.
 - 6. Wet-cure patch for not less than seven days by water-fog spray or water-saturated absorptive cover.

- I. Floor-Joint Repair: Cut out deteriorated concrete and reconstruct sides of joint with patching mortar. Install joint filler in nonmoving floor joints where indicated and as follows:
 1. Depth: Install joint filler to a depth of at least 3/4 inch (19 mm). Use fine silica sand no more than 1/4 inch (6 mm) deep to close base of joint. Do not use sealant backer rods or compressible fillers below joint filler.
 2. Top Surface: Install joint filler so that when cured, it is flush at top surface of adjacent concrete. If necessary, overfill joint and remove excess when filler has cured.
- J. Epoxy Crack Injection:
 1. Clean areas to receive capping adhesive of oil, dirt, and other substances that would interfere with bond, and clean cracks with oil-free compressed air or low-pressure water to remove loose particles.
 2. Place injection ports as recommended by epoxy manufacturer, spacing no farther apart than thickness of member being injected. Seal injection ports in place with capping adhesive.
 3. Seal cracks at exposed surfaces with a ribbon of capping adhesive at least 1/4 inch (6 mm) thick by 1 inch (25 mm) wider than crack.
 4. Inject cracks wider than 0.003 inch (0.075 mm) to a depth of 8 inches (200 mm).
 5. Inject epoxy adhesive, beginning at widest part of crack and working toward narrower parts. Inject adhesive into ports to refusal, capping adjacent ports when they extrude epoxy. Cap injected ports and inject through adjacent ports until crack is filled.
 6. After epoxy adhesive has set, remove injection ports and grind surfaces smooth.
- K. Corrosion-Inhibiting Treatment: Apply in two coats at manufacturer's recommended application rate. Remove film of excess treatment before patching treated concrete or applying a sealer.
- L. Polymer Sealer: Apply by brush, roller, or airless spray at manufacturer's recommended application rate.
 1. Apply to traffic-bearing surfaces, including parking areas and walks.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform the following tests and inspections:
 1. Packaged, Cementitious Patching Mortar: Four randomly selected sets of samples for each type of mortar required, tested according to ASTM C 928.
 2. Joint Filler: Core-drilled samples to verify proper installation.
 - a. Testing Frequency: One sample for each 100 feet (30 m) of joint filled.
 - b. Where samples are taken, refill holes with joint filler.
 3. Epoxy Crack Injection: Core-drilled samples to verify proper installation.
 - a. Testing Frequency: 1 sample for each 100 feet (30 m) of crack injected.
 - b. Where samples are taken, refill holes with epoxy mortar.
- C. Product will be considered defective if it does not pass tests and inspections.

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- D. Prepare test and inspection reports.

END OF SECTION 03930

SECTION 06105

MISCELLANEOUS CARPENTRY

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. Section Includes:
 - 1. Rooftop equipment bases and support curbs.
 - 2. Wood blocking, cants, and nailers.
 - 3. Wood furring and grounds.
 - 4. Plywood backing panels.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1.4 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For the following, from ICC-ES:
 - 1. Preservative-treated wood.
 - 2. Fire-retardant-treated wood.
 - 3. Power-driven fasteners.

1.5 DELIVERY, STORAGE, AND HANDLING

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

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Certified Wood: Lumber and plywood shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
- B. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
 - 3. Provide dressed lumber, S4S, unless otherwise indicated.
- C. Maximum Moisture Content of Lumber: 15 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWWPA U1; Use Category UC2 for interior construction not in contact with the ground, use Category UC3b for exterior construction not in contact with the ground, and use Category UC4a for items in contact with the ground.
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
- B. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
- B. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.
- C. Application: Treat items indicated on Drawings, and the following:
 - 1. Framing for raised platforms.
 - 2. Concealed blocking.
 - 3. Roof framing and blocking.
 - 4. Wood cants, nailers, curbs, equipment support bases, blocking, and similar members in connection with roofing.
 - 5. Plywood backing panels.

2.4 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction.
 - 1. Blocking.
 - 2. Nailers.
 - 3. Cants.
 - 4. Furring.
 - 5. Grounds.

2.5 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: DOC PS 1, Exterior, C-C Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch (19-mm) nominal thickness.

2.6 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - 1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Power-Driven Fasteners: NES NER-272.
- C. Screws for Fastening to Metal Framing: ASTM C 954, length as recommended by screw manufacturer for material being fastened.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.
- C. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- D. Do not splice structural members between supports unless otherwise indicated.
- E. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.
- F. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- G. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 1. Use inorganic boron for items that are continuously protected from water.
 2. Use copper naphthenate for items not continuously protected from water.
- H. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 1. NES NER-272 for power-driven fasteners.
 2. Table 2304.9.1, "Fastening Schedule," in current International Building Code.
- I. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.
- J. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
 1. Use common nails unless otherwise indicated. Drive nails snug but do not countersink nail heads.

3.2 WOOD BLOCKING AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading.
- C. Recess bolts and nuts flush with surfaces unless otherwise indicated.
- D. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

3.3 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

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- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06105

SECTION 06202

INTERIOR FINISH CARPENTRY

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. Custom cabinets/millwork.
 - 2. Cabinet hardware and accessories.
 - 3. Plastic Laminate surfaces on cabinets/millwork.
 - 4. Plastic Laminate counter tops.

1.3 DEFINITIONS

- A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items, unless concealed within other construction before woodwork installation.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated, including cabinet hardware and accessories, and finishing materials and processes.
 - 1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.
- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
 - 2. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, and other items installed in architectural woodwork.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm experienced in producing architectural woodwork similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

- B. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production and installation of millwork furniture.
- C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork, construction, finishes, and other requirements.
 - 1. Provide AWI Quality Certification Program labels and certificates indicating that woodwork, including installation, complies with requirements of grades specified.
- D. Fire-Test-Response Characteristics: Where fire-retardant materials or products are indicated, provide materials and products with specified fire-test-response characteristics as determined by testing identical products per test method indicated by UL, ITS, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation.
- E. Pre-installation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions will not damage cabinetry

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on Shop Drawings.
 - 2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.8 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

- B. Coordinate sizes, locations and other requirements of plumbing fixtures, faucets, soap dispensers and other related items. Obtain copies of approved submittals for all such items.
- C. Coordinate sizes, locations and other requirements of lighting fixtures; electrical and data devices, boxes and conduit; and equipment specified in Divisions 1 – 16. Obtain copies of approved submittals for all such items.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
 - 1. Wood Moisture Content: 5 to 10 percent.
- B. Wood Species for Opaque Painted Finish: Any closed-grain hardwood.
- C. Wood Products: Comply with the following:
 - 1. Medium-Density Fiberboard: ANSI A208.2, Grade MD; UL Certified Class 1 Fire Retardant.
 - 2. Particleboard: ANSI A208.1, Grade M-2 .
 - 3. Softwood Plywood: DOC PS 1, Medium Density Overlay.
 - 4. Hardwood Plywood and Face Veneers: HPVA HP-1.
- D. High-Pressure Decorative Laminate (PL): NEMA LD 3, grades as indicated and as required by woodwork quality standard.
 - 1. Manufacturers: Subject to compliance with requirements and colors selected in the Color and Materials Schedule on the drawing, manufacturers offering high-pressure decorative laminates that may be incorporated into the Work include the following:
 - a. Abet Laminati, Inc.
 - b. Formica Corporation.
 - c. Lamin-Art, Inc.
 - d. Panolam Industries International, Inc.
 - e. Wilsonart International; Div. of Premark International, Inc. (Basis-of-Design product)
- E. Adhesive for Bonding Plastic Laminate: contact cement.

2.2 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where indicated, use materials impregnated with fire-retardant chemical formulations indicated by a pressure process or other means acceptable to authorities having jurisdiction to produce products with fire-test-response characteristics specified.
 - 1. Do not use treated material that does not comply with requirements of referenced woodworking standard or that is warped, discolored, or otherwise defective.

2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants in solution to distinguish treated material from untreated material.
- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Comply with AWPAC20 (lumber) and AWPAC27 (plywood), for woodwork items indicated as fire-retardant treated. Use the following treatment type:
1. Exterior Type: Organic-resin-based formulation thermally set in wood by kiln-drying.
 2. Mill lumber before treatment and implement special procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying sticks or other causes, marring, and other defects affecting appearance of treated woodwork.
 3. Kiln-dry material before and after treatment to levels required for untreated material.
- C. Fire-Retardant-Treated Lumber and Plywood by Nonpressure Process: Apply nontoxic, water-soluble, fire-retardant treatment by dip, spray, roller, curtain coating, vacuum chamber, or soaking to achieve flame-spread rating of 25 or less and smoke-developed rating of 450 or less per ASTM E 84.

2.3 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 8 Section "Door Hardware."
- B. Hardware Standard: Comply with BHMA A156.9 for items indicated by referencing BHMA numbers or items referenced to this standard.
- C. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 135 degrees of opening, self-closing.
- D. Wire Pulls: Back mounted, 4 inches long, 5/16 inches in diameter.
- E. Catches: Magnetic catches, BHMA A156.9, B03141.
- F. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081, Flush mounted standards.
- G. Heavy Duty Shelf Standards and Supports at Utility Spaces: Double slot standards and brackets, size as required to suit application, finish as selected by Architect, Model 85 and 185 as manufactured by Knape & Vogt.
- H. Shelf Rests: BHMA A156.9, B04013.
- I. Drawer Slides: Side-mounted, full-extension, zinc-plated steel drawer slides with steel ball bearings, BHMA A156.9, B05091, and rated for the following loads:
1. Box Drawer Slides: 100 lbf.
 2. File Drawer Slides: 150 lbf.
 3. Pencil Drawer Slides: 45 lbf.
 4. Keyboard Slide: 75 lbf.
 5. Base Cabinet Shelf Slides: 200 lbf.

- J. Door Locks: BHMA A156.11, E07121, provide recessed steel flush bolt receiver for lock strike let into substrate material.
- K. Drawer Locks: BHMA A156.11, E07041, provide recessed steel flush bolt receiver for lock strike let into substrate material.
- L. Exposed Hardware Finishes: For exposed hardware, provide US26D finish.
- M. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

2.4 INSTALLATION MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln-dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

2.5 FABRICATION, GENERAL

- A. Interior Woodwork Grade: Provide Custom Grade interior woodwork complying with the referenced quality standard.
- B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
- C. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- D. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 - 1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch.
- E. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible, before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
 - 1. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.
- F. Shop cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

1. Seal edges of openings in countertops with a coat of varnish.

2.6 PLASTIC-LAMINATE SURFACES ON CABINETS

- A. Quality Standard: Comply with AWI Section 400 requirements for laminate cabinets.
- B. Grade: Custom.
- C. AWI Type of Cabinet Construction: Flush overlay.
- D. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 1. Horizontal Surfaces Other Than Tops: HGS.
 2. Vertical Surfaces: HGS.
 3. Edges: HGS.
- E. Materials for Semiexposed Surfaces: Provide surface materials indicated below:
 1. Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, Grade VGS.
 2. Drawer Sides and Backs: Thermoset decorative overlay.
 3. Drawer Bottoms: Thermoset decorative overlay.
- F. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 1. Match color, pattern, and finish as indicated in Color and Material Schedule on drawing.

2.7 COUNTERTOPS

- A. Countertops, General: Provide smooth, clean exposed tops and edges in uniform plane free of defects.
- B. Plastic-Laminate Tops: Plastic-laminate sheet, shop bonded to two layers of 3/4 -inch plywood.
 1. Plastic Laminate for Flat Tops: Grade HGS.
 2. Plastic Laminate for Backing: Grade BKL.
 3. Provide plastic-laminate edgings of the same material as top on front edge of top, on top edges of backsplashes and end splashes, and on ends of tops and splashes.
 4. Use exterior plywood for countertops containing sinks.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Condition woodwork to average prevailing humidity conditions in installation areas before installation.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

- A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.
- B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.
- C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.
- D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 - 2. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c. with No. 10 wafer-head screws sized for 1-inch penetration into wood blocking or wood hanging strips, or with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish, or with toggle bolts through metal backing or metal framing behind wall finish.
 - 3. Locks: Provide on doors and drawers where indicated.
 - 4. Pulls: Unless otherwise indicated, provide 1 pull on drawers to 24 inches wide; provide 2 pulls on drawers over 24 inches wide; provide 1 pull on each door.
 - 5. Cabinet Door Hinges and Bumpers: Provide in quantities as follows:
 - a. Doors to 39 inches high: 2 hinges, 2 bumpers.
 - b. Doors 40 to 59 inches high: 3 hinges, 3 bumpers.
 - c. Doors 60 to 79 inches high: 4 hinges, 3 bumpers.
 - d. Doors over 80 inches high: 5 hinges, 4 bumpers.
 - 6. Cabinet Shelf Supports: Drill support holes on 32 mm centers to allow for vertical adjustment as follows:
 - a. Base Cabinets: 4 inches up and down from center.
 - b. Wall and Tall Cabinets: Continuous from 4 inches below top to 4 inches above bottom.
- G. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
 - 1. Secure field joints in plastic-laminate countertops with concealed clamping devices located within 6 inches (150 mm) of front and back edges and at intervals not exceeding 24 inches (600 mm). Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.
 - 2. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 - 3. Secure backsplashes to walls with adhesive.

4. Calk space between backsplash and wall with sealant specified in Division 7 Section "Joint Sealants."
5. After allowing drying room film (yellow film caused by linseed oil oxidation) on linoleum countertops to disappear, cover until Substantial Completion.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean woodwork on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.
- D. Protect linoleum from mars, marks, indentations, and other damage from construction operations and placement of fixtures during remainder of construction period. Comply with manufacturer's written instructions for cleaning and protection.

END OF SECTION 06202

**SECTION 07210
BUILDING INSULATION**

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section specifies thermal insulation for buildings.

1.2 RELATED WORK

- A. Section 07520, PLASTIC SHEET AIR BARRIERS

1.3 SUBMITTALS:

- A. Submit in accordance with Section 2-20, CONTRACTORS PLANS, SAMPLES, AND DATA.
- B. Manufacturer's Literature and Data:
 - 1. Insulation, each type used
 - 2. Adhesive, each type used.
- C. Certificates: Stating the type, thickness and "R" value (thermal resistance) of the insulation to be installed.

1.4 STORAGE AND HANDLING:

- A. Store insulation materials in weather tight enclosure.
- B. Protect insulation from damage from handling, weather and construction operations before, during, and after installation.

1.5 APPLICABLE PUBLICATIONS:

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - C552-2000 Cellular Glass Thermal Insulation.
 - C553-02 Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
 - C578-01 Rigid, Cellular Polystyrene Thermal Insulation
 - C591-01 Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation
 - C612-00 Mineral Fiber Block and Board Thermal Insulation
 - C665-01 Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
 - C728-97 Perlite Thermal Insulation Board

C954-00	Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Base to Steel Studs From 0.033 inch to 0.112 inch in thickness
C1002-01	Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
E84-03.....	Surface Burning Characteristics of Building Materials
F1667-02.....	Driven Fasteners: Nails, Spikes and Staples.

PART 2 - PRODUCTS

2.1 INSULATION – GENERAL:

- A. Where thermal resistance ("R" value) is specified or shown for insulation, the thickness shown on the drawings is nominal. Use only insulation with actual thickness that is not less than that required to provide the thermal resistance specified. Products containing formaldehyde are prohibited.

2.2 EXTERIOR FRAMING OR FURRING INSULATION:

- A. Blanket or batt.
- B. Mineral Fiber: ASTM C665, Type II, Class C, Category I
- C. US R Values: minimum 19 in walls, 38 in ceilings

2.3 FASTENERS:

- A. Staples or Nails: ASTM F1667, zinc-coated, size and type best suited for purpose.
- B. Screws: ASTM C954 or C1002, size and length best suited for purpose with washer not less than two inches in diameter.
- C. Impaling Pins: Steel pins with head not less than two inches in diameter with adhesive for anchorage to substrate. Provide impaling pins of length to extend beyond insulation and retain cap washer when washer is placed on the pin.

2.4 ADHESIVE:

- A. As recommended by the manufacturer of the insulation.

2.5 TAPE:

- A. Pressure sensitive adhesive on one face.
- B. Perm rating of not more than 0.50.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

- A. Install insulation with the vapor barrier facing the heated side, unless specified otherwise.
- B. Install rigid insulating units with joints close and flush, in regular courses and with cross joints broken.
- C. Install batt or blanket insulation with tight joints and filling framing void completely. Seal cuts, tears, and unlapped joints with tape.
- D. Fit insulation tight against adjoining construction and penetrations, unless specified otherwise.

3.2 EXTERIOR FRAMING OR FURRING BLANKET INSULATION:

- A. Pack insulation around door frames and windows and in building expansion joints, door soffits and other voids. Pack behind outlets around pipes, ducts, and services encased in walls. Open voids are not permitted. Hold insulation in place with pressure sensitive tape.
- B. Lap vapor retarder flanges together over face of framing for continuous surface. Seal all penetrations through the insulation.
- C. Fasten blanket insulation between metal studs or framing and exterior wall furring by continuous pressure sensitive tape along flanged edges.
- D. Roof Rafter Insulation or Floor Joist Insulation: Place mineral fiber blankets between framing to provide not less than a two inch air space between insulation and roof sheathing or subfloor.
- E. Ceiling Insulation and Soffit Insulation:
 - 1. At metal framing or ceilings suspension systems, install blanket or batt insulation above suspended ceilings or metal framing at right angles to the main runners or framing. Tape insulation tightly together so no gaps occur and metal framing members are covered by insulation.
 - 2. In areas where suspended ceilings adjoin areas without suspended ceilings, install blanket, batt, or mineral fiberboard extending from the suspended ceiling to underside of deck or slab above. Secure in place to prevent collapse or separation of hung blanket, batt, or board insulation and maintain in vertical position. Secure blanket or batt with continuous cleats to structure above.

--- E N D ---

SECTION 07560

FLUID-APPLIED ROOFING

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 SCOPE

This section addresses fluid applied roofing for Garage # 2. The specification describes a fluid applied roofing system consisting of a fluid application of multiple layers of primer, aluminum roof coating, and elastomeric roof coating and an acrylic coating for the existing skylights. The roof coating system shall be the products of a single manufacturer and comprise a roof coating system.

1.3 RELATED WORK

Section 07620 - Sheet Metal Roof & Wall Panel Repairs

1.4 QUALITY CONTROL

- A. Work shall be performed by an installer experienced in the application of fluid applied roofing systems.
- B. Installation shall comply with printed instructions of roofing materials manufacturer.

1.5 SUBMITTALS

- A. Samples:
 - 1. 12 inch square cured sheet of roofing system showing color and texture.
 - 2. System proposed for flashing and reinforcing.
- B. Certificates:
 - 1. Installer affidavit of prior experience.
- C. Manufacturer's Literature and Data:
 - 1. Product Data Sheets for all components of the roofing system providing product description, product characteristics, and performance data.
 - 2. Manufacturer's Application Bulletin or other printed instructions for application of roofing materials to be installed.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to job site in manufacturer's original factory sealed containers labeled to identify product, manufacturer and point of manufacture.
- B. Observe precautions appropriate to flammable materials and "safety notes" included in roofing material manufacturer's printed instructions to installer before, during, and immediately following application of these materials.

1.6 JOB CONDITIONS

- A. Work shall proceed only on dry surfaces free of water, surface condensation, rain, snow, ice, and frost.
- B. Do not proceed when temperature of surfaces to receive roofing and flashing, is lower than 40 degrees F.
- C. Complete work on roof deck and install penetrations and projections through roof deck before roofing and flashing.

1.7 WARRANTY

Contractor shall provide unconditional 2 year workmanship warranty against peeling, cracking, and moisture penetration. Warranty shall start from date of acceptance by the Architect.

1.8 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM) Standards:
 - D412-06 Vulcanized Rubber and Thermoplastic Elastomers-Tension
 - D750-06 Rubber Deterioration in Carbon-Arc Weathering Apparatus
 - D1149-99 Rubber Deterioration-Surface Ozone Cracking in a Chamber
 - E96-05..... Water Vapor Transmission of Materials

PART 2 - PRODUCTS

2.1 ROOFING MATERIALS

- A. Prime Coat: Rust inhibitive primer with zinc chromate, zinc oxide, red iron oxide, and alkyd resin meeting Federal Specification TT-P-63D. Basis of Design Product is Uniflex Rust Inhibitive Metal Primer or approved equal.
- B. Aluminum Roof Coating: A cured, reflective coating with aluminum leafing pigments, refined asphalt, reinforcing fibers, and petroleum distillates. Meet or exceed Federal Specification TT-P-320D and ASTM D2824-85, Type III (non asbestos). Basis of Design Product is Uniflex 500 Premium Aluminum roof Coating or approved equal.
- C. Elastomeric Roof Coating: A highly elastic, 100 percent acrylic polymer coating. Initial elongation shall be not less than 200%. Tensile strength shall be not less than 150 psi. Permeance per ASTM D1653 equal to 8 perms. Basis of Design Product is Uniflex Premium White Elastomeric Roof Coating or approved equal.
- D. Clear Skylight Coating: Clear waterborne, 100% acrylic based coating that provides a durable weather-resistant finish while restoring the existing panels and increasing light transmission. Basis of Design Product is Uniflex Clear Skylight Coating or approved equal.

2.2 PATCHING CEMENT

Premixed acrylic based elastomeric resin, titanium dioxide, and reinforcing materials to provide a durable, long lasting, UV and water resistant patch. Use to repair metal roof seams, penetrations, wall flashings, and small holes. Basis of Design Product is Uniflex Acrylic Patching Cement or approved equal.

2.3 SEAM TAPE

Self-adhering, modified butyl rubber waterproofing tape. Seal seams, flashing, and penetrations. Tensile strength 475 psi @ 60% elongation. Peel strength 10 lbs per lineal inch. Basis of Design Product is Uniflex Seam Tape or approved equal.

2.4 SOLVENTS

For use in job site preparation, for cleanup and other related work follow manufacturer's recommendations.

PART 3 - EXECUTION

3.1 PREPARATION OF SURFACE

- A. Surfaces to receive roofing, flashing and acrylic coating shall be in sound condition and free of projections, depressions, grease, oil, asphalt, tar, paint, wax, dust or other debris that will prevent proper application of roofing. Power wash (minimum 2000 psi) metal surfaces and skylights to remove dirt, loose paint, rust, excessive chalking, and other foreign matter which could prevent proper adhesion prior to application of primer or restoratives.
- B. Contractor shall report adverse roof deck conditions of any type in writing to the Architect. Commencement of work constitutes acceptance of roof surfaces by installer as satisfactory for application of roofing and flashing.

3.2 CLEANING

- A. Prior to recoating, clean surfaces with compressed air to remove all dust, dirt, loose aggregate, and other foreign particles.

3.3 APPLICATION

- A. Inspect entire roof and identify and mark defective fasteners – compromised washers, slotting, etc. Install new fasteners in conjunction with activities described in 3.3. D. Lateral Seams and Section 07620 Sheet Metal Roof & Wall Panel Repairs.
- B. Install roofing with tools and equipment approved by roofing material manufacturer. Wet film thickness of roofing materials shall be as recommended by roofing material manufacturer to obtain the specified dry film thickness. Check wet film thickness frequently by use of a wet mil thickness gauge. Control application of fluid-applied material by maintaining careful balance at all times between material consumption and area covered. Multiple coats may be required to achieve required millage.
- C. Joint Treatment: Treat openings larger than 1/16 inch but less than 1/4 inch with a seam tape as specified. Cracks or holes larger than 1/4 inch shall be repaired with patching compound.
- D. Lateral Seams: Remove fasteners for 4 lf above bottom of seams at mid span. Clean surfaces and apply adhesive sealant to lateral and longitudinal edges where sheets overlap. Reinstall sheets to seal tightly. Apply 4" wide seam tape to edges of seams. Apply seam tape over fasteners. Overlap evenly on both sides of seams. Apply two courses of 4" wide seam tape at leading edges of sheets along the long axis of the building. Apply downstream course first. Overlap uphill tape course by 1". Apply along each side of the ridge cap a single course of 4" wide seam tape.
- E. Vent Pipes and Stacks: Apply seam tape or acrylic patching compound around projections through roof deck and extend it four inches horizontally and vertically around the projection.
- F. Skylights: Clean all skylights by pressure washing as described earlier. To clean and dry surfaces apply Skylight Coating per manufacturer's directions. Seal juncture of skylights and roof with seam tape prior to application of roof coating.

- G. Roofing: Complete all repair activities prior to coating.
1. Primer Course: After cleaning, apply by spraying over roof surfaces at a rate that will insure a total dry mil thickness of at least 3.2 mils. Install material as recommended by the manufacturer and allow to dry a minimum of 4 hours.
 2. Aluminum Course: After air cleaning and not less than 4 hours after application of Primer, apply by spraying over roof surfaces at a rate that will insure a total dry mil thickness of at least 7 mils. Install material as recommended by the manufacturer. Minimum dry time between coats is 72 hours.
 3. Elastomeric Course: After air cleaning and not less than 72 hours after final application of Aluminum Course, apply by spraying over clean, dry roof surfaces at a rate that will insure a total dry mil thickness of at least 20 mils. Install material in a single application. Minimum dry time for foot traffic is 24 hours.

3.4 PROTECTION AND CLEAN UP

- A. Keep completed roofing system free of non essential traffic and unrelated work until at least 48 hours after completion of roofing application.
- B. Provide temporary support for materials and equipment stored on roof during application.
- C. Protect adjacent construction from disfiguration by run, spillage or overspray, and repair work defaced in this manner.
- D. Remove tools, equipment and surplus materials and clear roof area of debris on completion of work.

3.5 REPAIRS

Repair damage to roofing and flashing before roof coating work is initiated. Install air fan shroud(s) prior to initiation of roof coating work. Repair to Architect's satisfaction all damages to surfaces and structures caused by Contractor's activities.

END OF SECTION 07560

SECTION 07620

SHEET METAL ROOF & WALL PANEL REPAIRS

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. Section Includes:
 - 1. Exposed-fastener, lap-seam replacement metal roof panels.
 - 2. Manufactured reglets and counter flashing.
 - 3. Formed roof drainage sheet metal fabrications.
 - 4. Formed low-slope roof sheet metal fabrications.
 - 5. Rubber membrane flashing and reinforcing.
 - 6. Anchors and miscellaneous items.

1.3 RELATED WORK

- A. Section 07560 - Fluid-Applied Roofing

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication and installation layouts of metal roof and wall panels; details of edge conditions, side-seam and endlap joints, panel profiles, corners, anchorages, trim, flashings, closures, and accessories; and special details. Distinguish between factory- and field-assembled work.
 - 1. Include details for forming, joining, supporting, and securing sheet metal flashing and trim, including pattern of seams, termination points, fixed points, expansion joints, expansion-joint covers, edge conditions, special conditions, and connections to adjoining work.
- C. Samples: For each exposed product and for each finish specified.
- D. Maintenance data.

1.5 QUALITY ASSURANCE

- A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or shown on Drawings.
- B. FMG Listing: Provide metal roof panels and component materials that comply with requirements in FMG 4471 as part of a panel roofing system and that are listed in FMG's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FMG markings.
- C. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class required for project location.
- D. Fire-Resistance Ratings: Where indicated, provide metal roof panels identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Combustion Characteristics: ASTM E 136.

1.6 WARRANTY

- A. Special Warranty on Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated. Fabricate items at the shop to greatest extent possible.

2.2 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of rubber membrane, fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

2.3 LAP-SEAM METAL ROOF PANELS TO MATCH EXISTING PANELS

- A. Lap-Seam Metal Roof Panels: 22 gage, formed to match existing roof panel profile and manufactured for sequential installation by attaching panels to supports using concealed clips or specified anchors and engaging edges of adjacent panels and lapping panels together, and sealed.

2.4 SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping.
- B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.
 - 1. Factory Prime Coating: Where painting after installation is indicated, pretreat with white or light-colored, factory-applied, baked-on epoxy primer coat; minimum dry film thickness of 0.2 mil (0.005 mm).

2.5 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils (0.76 to 1.0 mm) thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
 - 1. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F (116 deg C).
 - 2. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F (29 deg C).

2.6 ROOF DRAINAGE SHEET METAL FABRICATIONS

- A. Hanging Gutters: Fabricate to cross section and gage indicated or to match existing, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 96-inch- (2400-mm-) long sections. Furnish flat-stock gutter spacers and gutter brackets fabricated from same metal as gutters, of size recommended by SMACNA but not less than twice the gutter thickness.
- B. Downspouts: Fabricate rectangular downspouts complete with mitered elbows. Furnish with metal hangers, from same material as downspouts, and anchors. Fabricate to match existing profiles.

2.7 RUBBER FLASHING AND REINFORCING MEMBRANE, SEALANTS

- A. EPDM Rubber Sheet: ASTM D 6134, Type I, 60-mil- (1.5-mm-) thick flexible sheet, unreinforced, formed from EPDM.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Carlisle Coatings & Waterproofing Inc.; Sure-Seal EPDM.
- B. Bonding Adhesives: For bonding waterproofing sheets and sheet flashings to substrates and projections.
- C. Splicing Cement and Cleaner: Single-component butyl splicing cement and solvent-based splice cleaner.

- D. Lap Sealant: Single-component sealant.
- E. In-Seam Sealant: Single-component sealant.

2.8 ACCESSORIES

- A. Roof Panel Accessories: Provide components approved by roof panel manufacturer and as required for a complete repaired metal roof panel assembly to match existing roof panels unless otherwise indicated.
 - 1. Anchors: Fab-lok of same metal as item and substrate being anchored.
 - 2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.

2.9 FABRICATION

- A. Fabricate and finish metal roof panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes and as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.
- B. Fabricate metal roof panel side laps with factory-installed captive gaskets or separator strips that provide a tight seal and prevent metal-to-metal contact, in a manner that will seal weathertight and minimize noise from movements within panel assembly.
- C. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim, rubber membrane and other components of the Work securely in place, with provisions for thermal and structural movement so that completed sheet metal flashing and trim and rubber membrane shall not rattle, leak, or loosen, and shall remain watertight. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim and rubber membrane system.

3.2 METAL ROOF PANEL INSTALLATION

- A. Lap-Seam Metal Roof Panels: Fasten metal roof panels to supports at each lap-seam joint at location, spacing, and with fasteners recommended by manufacturer.
 - 1. Fasten metal roof panels to supports at each joint at location, spacing, and with Fab-Lok fasteners recommended by manufacturer.
 - 2. Provide weatherproof escutcheons for pipe and conduit penetrating roof.

3. Dissimilar Materials: Where elements of panel system will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by manufacturer.

3.3 UNDERLAYMENT INSTALLATION

- A. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Comply with temperature restrictions of underlayment manufacturer for installation; use primer rather than nails for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps with roller. Cover underlayment within 14 days.

3.4 ROOF DRAINAGE SYSTEM INSTALLATION

- A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to SMACNA recommendations and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.

3.5 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

3.6 RUBBER MEMBRANE REINFORCEMENTS AND SHEET FLASHING INSTALLATION

- A. Install rubber sheet flashings and preformed flashing accessories and adhere to substrates according to waterproofing manufacturer's written instructions.
- B. Form flashings to existing elements using laps and seams to provide waterproof detailing.
- C. Extend membranes to waterproof all points of water entry.
 1. Flash penetrations and field-formed inside and outside corners with uncured sheet flashing.
 2. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping rubber sheets to ensure a watertight installation. Apply lap sealant and seal edges of rubber sheet flashing terminations.
- D. Terminate and seal top of rubber sheet flashings with mechanically anchored termination bars if required.

3.7 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as items are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of

Katrina Related Repairs to Garage # 2 at Central Yard
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metal roof panel repairs, clean finished surfaces as recommended by metal roof panel manufacturer. Maintain in a clean condition during construction.

END OF SECTION 07620

SECTION 07841

THROUGH-PENETRATION FIRESTOP SYSTEMS

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. Section Includes:
 - 1. Penetrations in fire-resistance-rated walls.
 - 2. Penetrations in horizontal assemblies.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Schedule: For each penetration firestopping system. Include location and design designation of qualified testing and inspecting agency.
 - 1. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.
- C. Installer Certificates: From Installer indicating penetration firestopping has been installed in compliance with requirements and manufacturer's written recommendations.
- D. Product test reports.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."
- B. Fire-Test-Response Characteristics: Penetration firestopping shall comply with the following requirements:
 - 1. Penetration firestopping tests are performed by UL, Intertek ETL SEMKO, FM Global or a qualified testing agency acceptable to authorities having jurisdiction

2. Penetration firestopping is identical to those tested per testing standard referenced in "Penetration Firestopping" Article. Provide rated systems bearing marking of qualified testing and inspection agency.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Grace Construction Products.
 2. Hilti, Inc.
 3. Johns Manville.
 4. 3M Fire Protection Products.
 5. Tremco, Inc.; Tremco Fire Protection Systems Group.
 6. USG Corporation.

2.2 PENETRATION FIRESTOPPING

- A. Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
- B. Penetrations in Fire-Resistance-Rated Walls: Ratings determined per UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).
- C. Penetrations in Horizontal Assemblies: Ratings determined per UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).
- D. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- E. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

3.2 IDENTIFICATION

- A. Identify penetration firestopping with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of firestopping edge so labels will be visible to anyone seeking to remove penetrating items or firestopping. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
 - 1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Date of installation.

3.3 FIELD QUALITY CONTROL

- A. Contractor will engage a qualified testing agency to perform tests and inspections.
- B. Where deficiencies are found or penetration firestopping is damaged or removed because of testing, repair or replace penetration firestopping to comply with requirements.
- C. Proceed with enclosing penetration firestopping with other construction only after inspection reports are issued and installations comply with requirements.

3.4 PENETRATION FIRESTOPPING SCHEDULE

- A. For UL-classified systems, refer to system numbers in UL's "Fire Resistance Directory" under product Category XHEZ.
- B. For Intertek ETL SEMKO-listed systems, refer to design numbers in Intertek ETL SEMKO's "Directory of Listed Building Products" under "Firestop Systems."
- C. For FM Global-approved systems, refer to design numbers listed in FM Global's "Building Materials Approval Guide" under "Wall and Floor Penetration Fire Stops."

END OF SECTION 07841

SECTION 07842

FIRE-RESISTIVE JOINT SYSTEMS

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. Section Includes:
 - 1. Joints in or between fire-resistance-rated constructions.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Schedule: For each fire-resistive joint system. Include location and design designation of qualified testing agency.
 - 1. Where Project conditions require modification to a qualified testing agency's illustration for a particular fire-resistive joint system condition, submit illustration, with modifications marked, approved by fire-resistive joint system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.
- C. Installer Certificates: From Installer indicating fire-resistive joint systems have been installed in compliance with requirements and manufacturer's written recommendations.
- D. Product test reports.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."
- B. Fire-Test-Response Characteristics: Fire-resistive joint systems shall comply with the following requirements:
 - 1. Fire-resistive joint system tests are performed by a qualified testing agency acceptable to authorities having jurisdiction and in accordance with UL-Listed assemblies.
- C. Preinstallation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 FIRE-RESISTIVE JOINT SYSTEMS

- A. Where required, provide fire-resistive joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which fire-resistive joint systems are installed. Fire-resistive joint systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
- B. Joints in or between Fire-Resistance-Rated Construction: Ratings determined per UL 2079:
 - 1. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of construction they will join.
 - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Grace Construction Products.
 - b. Hilti, Inc.
 - c. Johns Manville.
 - d. Specified Technologies Inc.
 - e. 3M Fire Protection Products.
 - f. Tremco, Inc.; Tremco Fire Protection Systems Group.
 - g. USG Corporation.
- C. Exposed Fire-Resistive Joint Systems: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- D. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials, that are needed to install fill materials and to maintain ratings required. Use only components specified by fire-resistive joint system manufacturer and approved by the qualified testing agency for systems indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.
- B. Install fire-resistive joint systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
- C. Install forming materials and other accessories of types required to support fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
 - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.
- D. Install fill materials for fire-resistive joint systems by proven techniques to produce the following results:

1. Fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
2. Apply fill materials so they contact and adhere to substrates formed by joints.
3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.2 IDENTIFICATION

- A. Identify fire-resistive joint systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of joint edge so labels will be visible to anyone seeking to remove or penetrate joint system. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
 1. The words "Warning - Fire-Resistive Joint System - Do Not Disturb. Notify Building Management of Any Damage."
 2. Designation of applicable testing agency.
 3. Date of installation.

3.3 FIELD QUALITY CONTROL

- A. Inspecting Agency: Contractor will engage a qualified testing agency to perform tests and inspections.
- B. Where deficiencies are found or fire-resistive joint systems are damaged or removed due to testing, repair or replace fire-resistive joint systems so they comply with requirements.
- C. Proceed with enclosing fire-resistive joint systems with other construction only after inspection reports are issued and installations comply with requirements.

3.4 FIRE-RESISTIVE JOINT SYSTEM SCHEDULE

- A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product category XHBN.
- B. Head of Wall Fire-Resistive Joint Systems:
 1. Assembly Rating: Equivalent to wall rating.
 2. Nominal Joint Width: As indicated.
 3. Movement Capabilities: Class 1, 25 percent compression or elongation.

END OF SECTION 07842

SECTION 07920

JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SCOPE

- A. Section Includes:
 - 1. Silicone joint sealants.
 - 2. Urethane joint sealants.
 - 3. Latex joint sealants.
 - 4. Acoustical joint sealants.

1.3 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.
- D. Warranties: Sample of special warranties.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.
- B. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
 - 2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.

1.5 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.6 WARRANTY

- A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
 - 1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 - 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 - 3. Mechanical damage caused by individuals, tools, or other outside agents.
 - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- C. Stain-Test-Response Characteristics: Where sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- D. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

- A. Single-Component, Non-sag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, for Use NT.
 - 1. Products: Available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Building Systems; Omniseal 50.
 - b. Dow Corning Corporation; 756 SMS, 791, 795, 995.
 - c. GE Advanced Materials - SilGlaze II SCS2800, SilPruf NB SCS9000, SilPruf SCS2000, UltraPruf II SCS2900.
 - d. May National Associates, Inc.; Bondaflex Sil 295.
 - e. Pecora Corporation; 864, 895, 898.
 - f. Polymeric Systems, Inc.; PSI-641.
 - g. Sika Corporation, Construction Products Division; SikaSil-C995.
 - h. Tremco Incorporated; Spectrem 2, Spectrem 3.

2.3 URETHANE JOINT SEALANTS

- A. Single-Component, Non-sag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, for Use NT.

1. Products: Available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Pacific Polymers International, Inc.; Elasto-Thane 230 LM Type II.
 - b. Polymeric Systems, Inc.; PSI-901.
- B. Multi-Component, Non-sag, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 50, for Use NT.
 1. Products: Available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Pecora Corporation; Dynatrol II.
 - b. Polymeric Systems, Inc.; PSI-270.
 - c. Tremco Incorporated; Dymeric 240, Dymeric 240 FC.
- C. Multicomponent, Non-sag, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 50, for Use T.
 1. Products: Available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Polymeric Systems, Inc.; PSI-270.
 - b. Tremco Incorporated; Dymeric 240 FC.

2.4 LATEX JOINT SEALANTS

- A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
 1. Products: Available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Building Systems; Sonolac.
 - b. Bostik, Inc.; Chem-Calk 600.
 - c. May National Associates, Inc.; Bondaflex 600, Bondaflex Sil-A 700.
 - d. Pecora Corporation; AC-20+.
 - e. Schnee-Morehead, Inc.; SM 8200.
 - f. Tremco Incorporated; Tremflex 834.
- B. Butyl-Rubber-Based Joint Sealant: ASTM C 1311.
 1. Products: Available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Bostik, Inc.; Chem-Calk 300.
 - b. Pecora Corporation; BC-158.
 - c. Tremco Incorporated; Tremco Butyl Sealant.

2.5 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 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:
 - a. Pecora Corporation .
 - b. USG Corporation.

2.6 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.7 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 - d. Exterior insulation and finish systems.

3. Remove laitance and form-release agents from concrete.
 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Non-sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 1. Remove excess sealant from surfaces adjacent to joints.
 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
 4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.

5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C 1193.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
 1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform 3 tests for the first 500 feet of joint length for each kind of sealant and joint substrate.
 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 3. Inspect tested joints and report on the following:
 - a. Whether sealants filled joint cavities and are free of voids.
 - b. Whether sealant dimensions and configurations comply with specified requirements.
 - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
 4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
 5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal non-traffic surfaces.
 - 1. Joint Locations:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints of exterior openings where indicated.
 - c. Tile control and expansion joints.
 - d. Vertical joints on exposed surfaces of interior unit masonry, concrete, walls, and partitions.
 - e. Perimeter joints between interior wall surfaces and frames of interior doors and windows.
 - 2. Joint Sealant: Latex/Acrylic based or Butyl rubber based
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- B. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal non-traffic surfaces.
 - 1. Joint Sealant Location:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Tile control and expansion joints where indicated.
 - 2. Joint Sealant: Mildew resistant, single component, non-sag, neutral curing, Silicone or Urethane.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- C. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Location:
 - a. Acoustical joints where indicated.
 - b. Other joints as indicated.
 - 2. Joint Sealant: Acoustical.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range.
- D. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Locations:
 - a. Construction joints in cast-in-place concrete.
 - b. Joints in exterior insulation and finish systems.
 - c. Joints between metal panels.
 - d. Joints between different materials listed above.
 - e. Perimeter joints between materials listed above and frames of doors and windows.
 - f. Control and expansion joints in ceilings and other overhead surfaces.
 - g. Other joints as indicated.
 - 2. Joint Sealant: Urethane.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 07920

SECTION 08110

STEEL DOORS AND FRAMES

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. Section Includes:
 - 1. Standard hollow metal doors and frames.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance, Exterior Doors: Exterior doors shall withstand the wind loads, the effects of gravity loads, and loads and stresses within limits and under conditions indicated according to SEI/ASCE 7.
 - 1. Wind Loads: Coordinate wind loads with applicable building code, or appropriate wind loads determined by uniform pressure (velocity pressure) acting inward and outward in accordance with ANSI/ASTM E330 and as designated by engineer per current Building Code.
- B. Windborne-Debris-Impact-Resistance Performance: Provide impact-protective exterior doors that pass missile-impact and cyclic-pressure tests when tested according to ASTM E 1886 and ASTM E 1996,
 - 1. Large Missile Test: For overhead coiling doors located within 30 feet (9.144 m) of grade.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include elevations, door edge details, frame profile details, reinforcing and anchorages, metal thicknesses, material descriptions, core descriptions, finishes, door labeling compliance, preparations for hardware, and other related details.
- C. Windborne-Debris-Impact-Resistance Performance Certificate: For all exterior doors needing to meet this requirement including plastic infill panels.
- E. Samples for Initial Selection: For units with factory-applied color finishes.
- F. Samples for Verification: For each type of exposed finish required.

- G. Schedule: Prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.

1.5 QUALITY ASSURANCE

- A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at as close to neutral pressure as possible according to NFPA 252, or UL 10B.
 - 1. Temperature-Rise Limit: Where indicated, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.
- B. Smoke-Control Door Assemblies: Comply with NFPA 105 or UL 1784.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Amweld Building Products, LLC.
 - 2. Ceco Door Products; an Assa Abloy Group company.
 - 3. Curries Company; an Assa Abloy Group company.
 - 4. Fleming Door Products Ltd.; an Assa Abloy Group company.
 - 5. Pioneer Industries, Inc.
 - 6. Republic Doors and Frames.
 - 7. Steelcraft; an Ingersoll-Rand company.

2.2 REGULATORY REQUIREMENTS

- A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

2.3 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, CS, Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, CS, Type B.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum A40 (ZF120) metallic coating.
- D. Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40Z (12G) coating designation; mill phosphatized.

1. For anchors built into walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- F. Grout: ASTM C 476, except with a maximum slump of 4 inches (102 mm), as measured according to ASTM C 143/C 143M.
- G. Mineral-Fiber Insulation: ASTM C 665, Type I.
- H. Glazing: Division 8 Section "Glazing."
- I. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil (0.4-mm) dry film thickness per coat.

2.4 STANDARD HOLLOW METAL DOORS

- A. General: Comply with ANSI/SDI A250.8.
 1. Design: Flush panel.
 2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core.
 - a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
 3. Vertical Edges for Single-Acting Doors: Beveled edge, 1/8 inch in 2 inches.
 4. Top and Bottom Edges: Closed with flush or inverted 0.042-inch- (1.0-mm-) thick, end closures or channels of same material as face sheets.
 5. Tolerances: SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
- B. Hardware Reinforcement: ANSI/SDI A250.6.

2.5 INTERIOR DOORS AND FRAMES

- A. Standard-Duty Doors and Frames: SDI A250.8, Level 1.
 1. Physical Performance: Level C according to SDI A250.4.
 2. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches (44.5 mm).
 - c. Face: Metallic-coated, cold-rolled steel sheet, minimum thickness of 0.032 inch (0.8 mm).
 - d. Edge Construction: Model 1, Full Flush.
 - e. Core: Manufacturer's standard.
 3. Frames:
 - a. Materials: Metallic-coated, cold-rolled steel sheet, minimum thickness of 0.042 inch (1.0 mm).
 - b. Construction: Full profile welded.

4. Exposed Finish: Factory.

2.6 EXTERIOR DOORS AND FRAMES

A. Heavy-Duty Doors and Frames: SDI A250.8, Level 2.

1. Physical Performance: Level B according to SDI A250.4.
2. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches (44.5 mm).
 - c. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch (1.0 mm), with minimum A40 (ZF120) coating.
 - d. Edge Construction: Model 1, Full Flush.
 - e. Core: Manufacturer's standard insulation material.
3. Thermal-Rated Doors: Provide doors fabricated with thermal-resistance value (R-value) of not less than 2.1 deg F x h x sq. ft./Btu (0.370 K x sq. m/W) when tested according to ASTM C 1363.
4. Frames:
 - a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum A40 (ZF120) coating.
 - b. Construction: Full profile welded.
5. Exposed Finish: Factory.

2.7 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch (1.0 mm) thick, with corrugated or perforated straps not less than 2 inches (50 mm) wide by 10 inches (250 mm) long; or wire anchors not less than 0.177 inch (4.5 mm) thick.
2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch (1.0 mm) thick.

B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch (1.0 mm) thick, and as follows:

1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch (50-mm) height adjustment. Terminate bottom of frames at finish floor surface.

2.8 STOPS AND MOLDINGS

A. Moldings for Glazed Lites in Doors: Minimum 0.032 inch (0.8 mm) thick, same material as door face sheet.

- B. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch (16 mm) high unless otherwise indicated.
- C. Loose Stops for Glazed Lites in Frames: Minimum 0.032 inch (0.8 mm) thick, same material as frames.
- D. Terminated Stops: Where indicated, terminate stops 6 inches (152 mm) above finish floor with a 90-degree angle cut, and close open end of stop with steel sheet closure. Cover opening in extension of frame with welded-steel filler plate, with welds ground smooth and flush with frame.

2.9 LOUVERS

- A. Provide sight proof louvers for interior doors, where and if indicated, that comply with SDI 111C, with blades or baffles formed of 0.020-inch- (0.5-mm-) thick, cold-rolled steel sheet set into 0.032-inch- (0.8-mm-) thick steel frame.

2.10 ACCESSORIES

- A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.
- B. Ceiling Struts: Minimum 1/4-inch-thick by 1-inch- (6.4-mm-thick by 25.4-mm-) wide steel.
- C. Grout Guards: Formed from same material as frames, not less than 0.016 inch (0.4 mm) thick.

2.11 FABRICATION

- A. Tolerances: Fabricate hollow metal work to tolerances indicated in SDI 117.
- B. Hollow Metal Doors:
 - 1. Glazed Lites: Factory cut openings in doors.
 - 2. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated.
- C. Hollow Metal Frames: Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 - 1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 - 2. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
 - 3. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 4. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
 - 5. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 - 6. Jamb Anchors: Provide number and spacing of anchors as follows:

- a. Masonry Type: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c. and as follows:
 - 1) Three anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.
 - b. Stud-Wall Type: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c. and as follows:
 - 1) Four anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.
 - c. Postinstalled Expansion Type: Locate anchors not more than 6 inches (152 mm) from top and bottom of frame. Space anchors not more than 26 inches (660 mm) o.c.
7. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers.
- a. Single-Door Frames: Three door silencers.
 - b. Double-Door Frames: Two door silencers.
- D. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware according to the Door Hardware Schedule and templates furnished as specified in Division 8 Section "Door Hardware."
1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
 2. Reinforce doors and frames to receive nontemplated, mortised and surface-mounted door hardware.
 3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
- E. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow metal work.
 2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
 3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
 4. Provide loose stops and moldings on inside of hollow metal work.
 5. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

2.12 STEEL FINISHES

- A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
1. Shop Primer: ANSI/SDI A250.10.
- B. Factory-Applied Paint Finish: ANSI/SDI A250.3.
1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Hollow Metal Frames: Comply with ANSI/SDI A250.11.
1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. At fire-protection-rated openings, install frames according to NFPA 80.
 - b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - c. Install frames with removable glazing stops located on secure side of opening.
 - d. Install door silencers in frames before grouting.
 - e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - f. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - g. Field apply bituminous coating to backs of frames that are filled with grout containing anti-freezing agents.
 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
 5. Concrete Walls: Solidly fill space between frames and concrete with grout. Take precautions, including bracing frames, to ensure that frames are not deformed or damaged by grout forces.
 6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 7. In-Place Gypsum Board Partitions: Secure frames in place with postinstalled expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 8. Ceiling Struts: Extend struts vertically from top of frame at each jamb to overhead structural supports or substrates above frame unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction. Provide adjustable wedged or bolted anchorage to frame jamb members.
 9. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.

- c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.
- B. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
 - 1. Non-Fire-Rated Standard Steel Doors:
 - a. Jambs and Head: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).
 - b. Between Edges of Pairs of Doors: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).
 - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch (9.5 mm).
 - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch (19 mm).
 - 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
 - 3. Smoke-Control Doors: Install doors according to NFPA 105 and UBC Standard 7-2.
- C. Glazing: Comply with installation requirements in Division 8 Section "Glazing" and with hollow metal manufacturer's written instructions.
 - 1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches (230 mm) o.c. and not more than 2 inches (50 mm) o.c. from each corner.

3.2 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work complete and in proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- C. Metallic-Coated Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 08110

SECTION 08331

OVERHEAD COILING DOOR REPAIR

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. Section includes:
 - 1. Repair of exterior electrically operated service doors.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance, Exterior Doors: Exterior overhead coiling doors items shall withstand the wind loads, the effects of gravity loads, and loads and stresses within limits and under conditions indicated according to SEI/ASCE 7.
 - 1. Wind Loads: Coordinate wind loads with applicable building code, or appropriate wind loads determined by uniform pressure (velocity pressure) acting inward and outward in accordance with ANSI/ASTM E330 and as designated by engineer per current Building Code.
 - 2. Design sectional doors, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Windborne-Debris-Impact-Resistance Performance: Provide impact-protective exterior overhead coiling doors that pass missile-impact and cyclic-pressure tests when tested according to ASTM E 1886 and ASTM E 1996,
 - 1. Large Missile Test: For overhead coiling doors located within 30 feet (9.144 m) of grade.
- C. Seismic Performance: Overhead coiling doors shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.

1.4 SUBMITTALS

- A. Product Data: For each type and size of overhead coiling door part and accessory.
- B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data. Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 2. Wiring Diagrams: For power, signal, and control wiring.
- C. Samples: For each exposed product and for each color and texture specified.
- D. Seismic Qualification Certificates: For overhead coiling doors, accessories, and components, from manufacturer.
- E. Windborne-Debris-Impact-Resistance Performance Certificate: For all exterior doors needing to meet this requirement.
- G. Oversize Construction Certification: For door assemblies required to be fire-rated and that exceed size limitations of labeled assemblies.
- H. Maintenance Data.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for both installation and maintenance of units required for this Project.

1.6 WARRANTY

- A. Special Warranty: Manufacturers standard form in which manufacturer agrees to repair or replace repaired components of sectional doors that fail in materials or workmanship within specified warranty period.
1. Warranty Period: Five (5) years from substantial date of completion.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for both installation and maintenance of units required for this Project.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

PART 2 - PRODUCTS

2.1 DOOR CURTAIN MATERIALS AND CONSTRUCTION

- A. Door Curtains: Fabricate parts for overhead coiling-door curtain of interlocking metal slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:
1. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face.

- B. Curtain Jamb Guides: Manufacturer's channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent over travel of curtain.

2.2 ELECTRIC DOOR OPERATORS

- A. General: Electric door operator assembly of size and capacity recommended and provided by door manufacturer for door and operation-cycles requirement specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, remote-control stations, control devices, integral gearing for locking door, and accessories required for proper operation.
 - 1. Comply with NFPA 70.
 - 2. Provide control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6, with NFPA 70 Class 2 control circuit, maximum 24 V, ac or dc.
- B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each door.
- C. Electric Motors: Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Division 11 Section "Common Motor Requirements for Equipment" unless otherwise indicated.
 - 1. Electrical Characteristics:
 - a. Phase: To match existing.
 - b. Volts: To match Existing
 - c. Usage Classification: Standard duty, up to 60 cycles per hour.
 - 2. Motor Type and Controller: Reversible motor and controller (disconnect switch) for motor exposure indicated.
 - 3. Motor Size: Minimum size as indicated. If not indicated, large enough to start, accelerate, and operate door in either direction from any position, at a speed not less than 8 in./sec. (203 mm/s) and not more than 12 in./sec. (305 mm/s), without exceeding nameplate ratings or service factor.
 - 4. Operating Controls, Controllers (Disconnect Switches), Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.
- D. Obstruction Detection Device: Equip motorized door with indicated external automatic safety sensor capable of protecting full width of door opening. For non-fire-rated doors, activation of device immediately stops and reverses downward door travel.
 - 1. Photoelectric Sensor: Manufacturer's standard system designed to detect an obstruction in door opening without contact between door and obstruction.[Provide self-monitoring capability designed to interface with door operator control circuit to detect damage to or disconnection of sensing device.]
- E. Remote-Control Station: Momentary-contact, three-button control station with push-button controls labeled "Open," "Close," and "Stop."
 - 1. Exterior units, full-guarded, standard-duty, surface-mounted, weatherproof type, NEMA ICS 6, Type 4 enclosure, key operated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install overhead coiling door parts, slats and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- B. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion. Lubricate bearings and sliding parts as recommended by manufacturer. Adjust seals to provide weather tight fit around entire perimeter.

3.2 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain overhead coiling doors.

END OF SECTION 08331

SECTION 08520

ALUMINUM WINDOWS

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. Section includes aluminum windows for exterior locations.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.
- C. Samples: For each exposed product and for each color specified, 2 by 4 inches (50 by 100 mm) in size.
- D. Product Schedule: For aluminum windows. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Sample warranties.

1.5 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period:
 - a. Window: 10 years from date of Substantial Completion.
 - b. Glazing Units: 10 years from date of Substantial Completion.
 - c. Aluminum Finish: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Hurricane resistant Kawneer 8400TL Isolock Single Hung window unit or comparable product by one of the following:

1. All Seasons Window & Door Mfg., Inc.; All Seasons Commercial Division, Inc.
2. Boyd Aluminum Manufacturing.
3. Custom Window Company.
4. DeSCo Architectural Inc.
5. EFCO Corporation; a Pella company.
6. EXTECH Exterior Technologies, Inc.
7. Fleetwood Windows & Doors.
8. Gerkin Windows and Doors.
9. Graham Architectural Products Corp.
10. Kawneer North America; an Alcoa company. (Basis-of-Design product)
11. Mannix Exterior Wall Systems, Inc.
12. Peerless Products Inc.
13. Quaker Windows Products Co.
14. Thermal Windows, Inc.
15. TRACO.
16. Wausau Window and Wall Systems.
17. Winco.
18. YKK AP America Inc.

2.2 WINDOW PERFORMANCE REQUIREMENTS

- A. Product Standard: AAMA/WDMA/CSA 101/I.S.2/A440.
1. Minimum Performance Class: H-HC70
 2. Minimum Performance Grade: H-AW70

2.3 ALUMINUM WINDOWS

2.4 ALUMINUM WINDOWS

- A. Operating Types: Single hung.
- B. Frames and Sashes: Thermally broken aluminum extrusions complying with AAMA/WDMA/CSA 101/I.S.2/A440.
- C. Glass: Per requirements of Division 8 Section "Glazing".
- D. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.
- E. Hardware, General: Manufacturer's standard corrosion-resistant hardware sized to accommodate sash weight and dimensions.

1. Exposed Hardware Color and Finish: As selected by Architect from manufacturer's full range.
- F. Hung Window Hardware:
1. Counterbalancing Mechanism: AAMA 902.
 2. Locks and Latches: Operated from the inside only.
 3. Tilt Hardware: Releasing tilt latch allows sash to pivot about horizontal axis.
- G. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.
- H. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.
1. Exposed Fasteners: Do not use exposed fasteners to the greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.5 ACCESSORIES

- A. Subsills: Thermally broken, extruded-aluminum subsills in configurations to match existing.
- B. Interior Trim: Extruded-aluminum profiles in sizes and configurations to match existing.
- C. Panning Trim: Extruded-aluminum profiles in sizes and configurations to match existing.

2.6 INSECT SCREENS

- A. General: Fabricate insect screens to integrate with window frame. Provide screen for each operable exterior sash. Screen wickets are not permitted.
 1. Type and Location: Half, outside for single-hung sashes.
- B. Aluminum Frames: Complying with SMA 1004 or SMA 1201.
- C. Glass-Fiber Mesh Fabric: 18-by-14 (1.1-by-1.4-mm) mesh complying with ASTM D 3656.
 1. Mesh Color: Manufacturer's standard.

2.7 FABRICATION

- A. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.
- B. Glaze aluminum windows in the factory.
- C. Weather strip each operable sash to provide weathertight installation.
- D. Provide weep holes and internal passages to conduct infiltrating water to exterior.

- E. Provide water-shed members above side-hinged sashes and similar lines of natural water penetration.
- F. Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections, as indicated. Provide mullions and cover plates capable of withstanding design wind loads of window units.
- G. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation.

2.8 ALUMINUM FINISH

- A. Finish: To match existing.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E 2112.
- B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.
- C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.
- D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.
- E. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.
- F. Clean exposed surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- G. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION 08520

**SECTION 08710
 BUILDERS HARDWARE**

PART 1 - GENERAL

1.1 SCOPE

This section specifies Builders' Hardware and related items necessary for complete installation and operation of doors.

1.2 RELATED WORK

- A. Section 07920, JOINT SEALANTS.
- B. Section 08110, STEEL DOORS AND FRAMES
- C. Section 09900, PAINTING.

1.3 GENERAL

- A. Hardware for Labeled Fire Doors and Exit Doors: Conform to requirements of NFPA 80 for labeled fire doors and to NFPA 101 for exit doors, as well as to other requirements specified. Provide hardware listed by UL, except where heavier materials, large size, or better grades are specified herein under paragraph HARDWARE SETS. In lieu of UL labeling and listing, test reports from a nationally recognized testing agency may be submitted showing that hardware has been tested in accordance with UL test methods and that it conforms to NFPA requirements.
- B. Hardware for application on metal doors and frames shall be made to standard templates. Furnish templates to the fabricator of these items in sufficient time so as not to delay the construction.
- C. The following items shall be of the same manufacturer, except as otherwise specified:
 - 1. Locksets.
 - 2. Hinges for hollow metal doors.
 - 3. Exit devices.
 - 4. Door closers.

1.4 SUBMITTALS

- A. Submit in accordance with Section 2-20, CONTRACTOR'S PLANS, SAMPLES, AND DATA
- B. Hardware Schedule: Prepare and submit hardware schedule in the following form:

Hardware Item	Quantity	Size	Reference Publication Type No.	Finish	Mfr. Name and Catalog No.	Key Control Symbols	UL Mark (if fire rated and listed)	ANSI/BHMA Finish Designation

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C. Samples and Manufacturers' Literature:

1. Samples: All hardware items proposed for the project that have not been previously approved by Builders Hardware Manufacturers Association shall be submitted for approval. Tag and mark all items with manufacturer's name, catalog number and project number.
2. Samples are not required for hardware listed in the specifications by manufacturer's catalog number, if the contractor proposes to use the manufacturer's product specified.

C. Certificate of Compliance and Test Reports: Submit certificates that hardware conforms to the requirements specified herein. The testing shall have been conducted either in the manufacturer's plant and certified by an independent testing laboratory or conducted in an independent laboratory, within four years of submittal of reports for approval.

1.5 DELIVERY AND MARKING

A. Deliver items of hardware to job site in their original containers, complete with necessary appurtenances including screws, keys, and instructions. Tag one of each different item of hardware and deliver to Engineer for reference purposes. Tag shall identify items by Project Specification number and manufacturer's catalog number. These items shall remain on file in the Engineer's office until all other similar items have been installed in project, at which time the Engineer will deliver items on file to Contractor for installation in predetermined locations on the project.

1.6 INSTRUCTIONS

- A. Hardware Set Symbols on Drawings: Except for protective plates, door stops, mutes, thresholds and the like specified herein, hardware requirements for each door are indicated on drawings by symbols. Symbols for hardware sets consist of letters "HW" followed by a number. Each number designates a set of hardware items applicable to a door type.
- B. Manufacturers' Catalog Number References: Where manufacturers' products are specified herein, products of other manufacturers which are considered equivalent to those specified may be used. Manufacturers whose products are specified are identified by abbreviations as follows:

Stanley	The Stanley Works	New Britain, CT
Von Duprin	Von Duprin Hardware Co.	Indianapolis, IN

C. Keying: All cylinders shall be keyed into existing Grand Master Key System. Provide removable core cylinders that are removable only with a special key or tool without disassembly of knob or lockset. Cylinders shall be 6 pin type. Keying information shall be furnished at a later date by the Engineer.

1. Keying information will be furnished to the Contractor by the Engineer.
2. Contractor shall maintain control of all keys until turnover. Notify Engineer immediately when and to whom keys or keying information is supplied. At turnover, provide all such keys and keying information to the Engineer. Contractor shall not retain keying information at the close of the project.

1.7 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. In text, hardware items are referred to by series, types, etc., listed in such specifications and standards, except as otherwise specified.
- B. American Society for Testing and Materials (ASTM):
F883-1904..... Standard Performance Specification for Padlocks
- C. American National Standards Institute (ANSI):
A156.1-00..... Butts and Hinges
A156.2-03..... Bored and Pre-assembled Locks and Latches
A156.3-01..... Exit Devices
A156.4-00..... Door Controls (Closers)
A156.5-01..... Auxiliary Locks and Associated Products
A156.6-01..... Architectural Door Trim
A156.8-00..... Door Controls-Overhead Stops and Holders
A156.13-02..... Mortise Locks and Latches Series 1000
A156.16-02..... American National Standard for Auxiliary Hardware
A156.18-00..... Materials and Finishes
A156.21-01..... Thresholds
A156.22-03..... Door Gasketing and Edge Seal Systems
A156.26-00..... Continuous Hinges
A250.8-03..... Standard Steel Doors and Frames
- D. National Fire Protection Association (NFPA):
80-99 Fire Doors and Fire Windows
101-03 Life Safety Code
- E. Underwriters Laboratories, Inc. (UL):
Building Materials Directory (2011)

PART 2 - PRODUCTS

2.1 BUTT HINGES

- A. ANSI A156.1. The following types of butt hinges shall be used for the types of doors listed, except where otherwise specified.

1. Exterior Doors: Type A2112 for doors 3 feet wide or less and Type A2111 for doors over 3 feet wide. Hinges for exterior doors shall have non-removable pins.
2. Interior Doors: Type 8112 for doors 3 feet wide or less and Type A8111 for doors over 3 feet wide.
3. Any door installed in structural steel frames: Type A2412, A8412, A2411 or A8411 as applicable, except where otherwise specified. Such hinges shall be of same quality and weight as other hinges listed above for applicable door sizes.

2.2 DOOR CLOSING DEVICES

Closing devices shall be products of one manufacturer.

2.3 OVERHEAD CLOSERS

- A. Conform to ANSI A156.4, Grade 1.
- B. Closers shall conform to the following:
 1. The closer shall have 50 percent adjustable closing force over minimum value for that closer and have adjustable hydraulic back check effective between 60 degrees and 85 degrees of door opening.
 2. Where specified, closer shall have hold-open feature.
 3. Size Requirements: Size closers in accordance with manufacturer's guidelines
 4. Material of closer shall be forged or cast iron or cast aluminum.
 5. Arm and brackets for closers shall be steel, malleable iron or high strength ductile cast iron.
 6. Closers shall have full size cover.
 7. Closers shall have adjustable hydraulic back-check and separate valves for closing and latching speed.

2.4 DOOR STOPS

- A. Conform to ANSI A156.16.
- B. Provide door stops wherever an opened door or any item of hardware thereon would strike a wall, column, equipment or other parts of building construction. For concrete, masonry or quarry tile construction, use lead expansion shields for mounting door stops.
- C. Where cylindrical locks with turn pieces or pushbuttons occur, equip wall bumpers Type L22251 (rubber pads having concave face) to receive turn piece or button.
- D. Substitute floor stops Type L22141 or L22161 as appropriate, when wall bumpers would not provide an effective door stop.
- E. Where drywall partitions occur, use floor stops, Type L22141 or L22161.
- F. Provide stop Type L22011 or L22181, as applicable for exterior doors.
- G.I. Provide appropriate door mounted stop on doors in individual toilets where floor or wall mounted stops cannot be used.

2.5 FLOOR DOOR HOLDERS

Conform to ANSI Standard A156.16. Provide extension strikes for Types L21301 and L21311 holders where necessary.

2.6 LOCKS AND LATCHES

- A. Conform to ANSI A156.2. Locks and latches for doors 1-3/4 inch thick or over shall have beveled fronts. Lock cylinders shall have not less than six pins. Cylinders for all locksets shall be removable core type. Cylinders shall be furnished with construction removable cores and construction master keys. Cylinder shall be removable by special key or tool. Construct all cores so that they will be interchangeable into the core housings of all mortise locks, rim locks, cylindrical locks, and any other type lock included in the Master Key System. Disassembly of lever or lockset shall not be required to remove core from lockset. Provide temporary keying device or construction core of allow opening and closing during construction and prior to the installation of final cores.
- B. In addition to above requirements, locks and latches shall comply with following requirements:
1. Mortise Lock and Latch Sets: Conform to ANSI/BHMA A156.13. Mortise locksets shall be series 1000, minimum Grade 2. Where lever handles are required, use lever handles similar to Falcon S-lever Design. Lever handle shall be fabricated from wrought stainless steel. All locks and latchsets shall be furnished with curved lip strike and wrought box. Lock function F02 shall be furnished with key plates similar to Russwins No. A70.. Furnish armored fronts for all mortise locks.
 2. Cylindrical Lock and Latch Sets: levers shall meet ADA (Americans with Disabilities Act) requirements. Cylindrical locksets shall be series 4000 Grade I. Knobs for series 4000 lock and latch sets shall have 2-1/4 inch diameters.
 3. Auxiliary locks shall be as specified under hardware sets and conform to ANSI A156.5.

2.7 KEYS

- A. Stamp all keys with change number and key set symbol. Furnish keys in quantities as follows:

Locks/Keys	Quantity
Cylinder locks	2 keys each
Cylinder lock change key blanks	10 each different key way
Master-keyed sets	6 keys each
Grand Master sets	6 keys each
Control key	1 key

2.8 KEY CABINET

- A. ANSI Standard A156.5. Provide key cabinet made of cold rolled, 1.2 mm (0.0478 inch) thick furniture steel electro-welded. Doors shall have "no sag" continuous brass-pin piano type hinge and be equipped with chrome plated locking door handles, hook cam and two parasentric keys. All locks shall be nickel plated with solid brass pin tumbler cylinder keyed as directed. Key Cabinet and Key Control System shall accommodate all keys for this project plus 25 percent.
- B. Key tags shall consist of two sets: Permanent self-locking and loan key snaphook type with tag colors as follows: Red fiber marker of the permanent self-locking type approximately 1-1/4 inch in diameter engraved with the legend "FILE KEY MUST NOT BE LOANED." Also furnish for each hook a white cloverleaf key marker with snap-hooks engraved with the legend "LOAN KEY."

2.9 COMBINATION KICK-MOP PLATES

- A. Conform to ANSI Standard A156.6.
- B. Provide protective plates as specified below:
 - 1. Provide kick-mop plates for both sides of each door, except where noted as not required. Kick-mop plates shall be 5 inches high. Extend all kick-mop plates to within 1/4 inch of each edge of doors.
 - 2. Kick-mop plates are not required on Exterior side of exterior doors;

2.10 EXIT DEVICES

- A. Conform to ANSI Standard A156.3. Exit devices shall be Grade 1; type and function are specified in hardware sets. Provide flush with finished floor strikes for vertical rod exit devices in interior of building. Trim shall have lever handles similar to locksets, unless otherwise specified.
- B. Exit devices for fire doors shall comply with Underwriters Laboratories, Inc., requirements for Fire Exit Hardware. Submit proof of compliance.

2.11 FLUSH BOLTS (LEVER EXTENSION)

- A. Conform to ANSI A156.16. Flush bolts shall be Type L24081 unless otherwise specified. Furnish proper dustproof strikes conforming to ANSI A156.16, for flush bolts required on lower part of doors.
- B. Face plates for cylindrical strikes shall be rectangular and not less than 1 x 2-1/2 inches.

2.12 COMBINATION PUSH AND PULL PLATES

Conform to ANSI 156.6. Type J303, stainless steel 1/8 inch thick, brushed finish, 3-1/2 x 16 inches, top and bottom edges shall be rounded.

2.13 THRESHOLDS

- A. Conform to ANSI A156.21, mill finish extruded aluminum, except as otherwise specified.
Thresholds shall be installed in a bed of sealant with machine screws and expansion shields,
Furnish thresholds for the full width of the openings.

2.14 WEATHERSTRIPS (FOR EXTERIOR DOORS)

- A. Conform to ANSI A156.22. Air leakage shall not to exceed 0.5 CFM per foot of crack length.

2.15 FINISHES

- A. Finishes on all hinges, closers, thresholds, etc., shall Conform to ANSI A156.21 (619) providing a brushed aluminum or brushed nickel appearance.

PART 3 - EXECUTION

3.1 HARDWARE HEIGHTS

- A. Locate hardware on doors at heights specified below unless otherwise noted:
- B. Hardware Heights from Finished Floor:
 - 1. Exit devices centerline of strike 40-5/16 inches.
 - 2. Locksets and latch sets centerline of strike 40-5/16 inches.
 - 3. Deadlocks centerline of strike 48 inches.
 - 4. Centerline of door pulls to be 40 inches.
 - 5. Push plates and push-pull shall be 50 inches to top of plate.
 - 6. Locate other hardware at standard commercial heights. Locate push and pull plates to prevent conflict with other hardware.

3.2 INSTALLATION

- A. Closer devices, including those with hold-open features, shall be equipped and mounted to provide maximum door opening permitted by building construction or equipment. Closers shall be mounted regular arm. Where closers are mounted on doors they shall be mounted with hex nuts and bolts.
- B. Substitute parallel arm or top jamb mounting for regular arm mounting where the following conditions occur:
 - 1. Where door swing, in full open position, would be limited to less than 90 degrees due to partition construction and closer location.
 - 2. Restroom doors which shall have closer installed parallel arm on exterior side of doors.
 - 3. Where exterior doors open outward.

C. Hinge Size Requirements:

Door Thickness	Door Width	Hinge Height
1-3/4 inch	3 feet and less	4-1/2 inches
1-3/4 inch	Over 3 feet but not more than 4 feet	5 inches

D. Hinge leaves shall be sufficiently wide to allow doors to swing clear of door frame trim.

E. Hinges Required Per Door:

Doors over 5 feet high and less than 7 feet 6 inches high	3 butts
Doors 7 feet 6 inches and higher	4 butts

F. Fastenings: Suitable size and type and shall harmonize with hardware as to material and finish. Provide machine screws and lead expansion shields to secure hardware to concrete, ceramic or quarry floor tile, or solid masonry. Fiber or rawl plugs and adhesives are not permitted. All fastenings exposed to weather shall be of nonferrous metal.

G. After locks have been installed; demonstrate to Engineer that keys operate their respective locks in accordance with keying requirements. Installation of locks which do not meet specified keying requirements shall be considered sufficient justification for rejection and replacement of all locks installed on project.

3.3 HARDWARE SETS

Following sets of hardware correspond to hardware symbols shown on drawings. Where hardware set for a single door is specified for a pair of doors; equip each leaf of such pair of doors with set noted. Only those hardware sets that are shown on drawings will be required. Disregard hardware sets listed in specifications but not shown on drawings.

HARDWARE SETS	
<u>HW 1 MEN'S RESTROOM</u> Butts as required Door push/pull plate combo Push plate Kick plates Stops Closer C02011 on inside of door	<u>HW 2 – Offices</u> Butts as required Office type cylindrical lockset, levers each side, push-button inside keyed outside

HARDWARE SETS	
HW 3 – WOMEN'S RESTROOMS Butts as required Office type cylindrical lockset, levers each side, push-button inside keyed outside Stops Closer CO2011 on inside of door Kick plates	HW 4 – Interior Hallway and Conference Butts as required Office entry standard with levers each side, no locks
HW 5 – Mechanical Room Butts as required Mortise Lockset Closer CO2011 on inside of door Kick plates Stops	HW 6 – Exterior Butts as required Exit device with push bar and exterior lock w/thumb tab Stops Closer CO2011 Kick plates

--- E N D ---

SECTION 08800

GLAZING

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. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
 - 1. Interior and exterior doors.
 - 2. Interior borrowed lites.
 - 3. Aluminum windows.

1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design glass, including comprehensive engineering analysis according to ASTM E 1300 and ICC's International Building Code by a qualified professional engineer, using the following design criteria:
 - 1. Design Wind Pressures: As indicated on Drawings and per applicable current Building Code.
 - 2. Vertical Glazing: For glass surfaces sloped 15 degrees or less from vertical, design glass to resist design wind pressure based on glass type factors for short-duration load.
 - 3. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.

1.4 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glazing material type, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
 - 1. Testing will not be required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.

1.5 SUBMITTALS

- A. Product Data: For each glass product and glazing material indicated.

- B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches (300 mm) square.
- C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- D. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- E. Preconstruction adhesion and compatibility test report.
- F. Windborne-Debris-Impact-Resistance Performance Certificate: For all exterior lites needing to meet this requirement.

1.6 QUALITY ASSURANCE

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. GANA Publications: GANA's "Laminated Glazing Reference Manual" and GANA's "Glazing Manual."
 - 2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- B. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

1.7 WARRANTY

- A. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form in which laminated-glass manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
 - 1. Warranty Period: Ten (10) years from date of Substantial Completion.
- B. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: Ten (10) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GLASS PRODUCTS, GENERAL

- A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.
- B. Strength: Where heat-strengthened glass is indicated, provide Kind HS heat-treated float glass or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.
- C. Windborne-Debris-Impact Resistance: Provide exterior glazing that passes basic enhanced-protection testing requirements in ASTM E 1996 for Wind Zone 4 when tested according to ASTM E 1886. Test specimens shall be no smaller in width and length than glazing indicated for use on the Project and shall be installed in same manner as glazing indicated for use on the Project.
 1. Large-Missile Test: For glazing located within 30 feet (9.1 m) of grade.
- D. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
 1. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
 2. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
 3. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.2 GLASS PRODUCTS

- A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.
- B. Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.
 1. Provide Kind FT (fully tempered) float glass where safety glass is required.

2.3 LAMINATED GLASS

- A. Windborne-Debris-Impact-Resistant Laminated Glass: ASTM C 1172, and complying with testing requirements in 16 CFR 1201 for Category II materials, with "Windborne-Debris-Impact Resistance" Paragraph in "Glass Products, General" Article, and with other requirements specified. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
 1. Construction: Laminate glass with one of the following to comply with interlayer manufacturer's written recommendations:

- a. Polyvinyl butyral interlayer.
 - b. Polyvinyl butyral interlayers reinforced with polyethylene terephthalate film.
 - c. Ionoplast interlayer.
 - d. Cast-in-place and cured-transparent-resin interlayer.
 - e. Cast-in-place and cured-transparent-resin interlayer reinforced with polyethylene terephthalate film.
2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
 3. Interlayer Color: Clear.

2.4 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190, and complying with other requirements specified.
 1. Sealing System: Dual seal.
 2. Spacer: Manufacturer's standard spacer material and construction.

2.5 GLAZING GASKETS

- A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:
 1. Silicone complying with ASTM C 1115.
- B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned silicone gaskets complying with ASTM C 509, Type II, black; of profile and hardness required to maintain watertight seal.
 1. Application: Use where soft compression gaskets will be compressed by inserting dense compression gaskets on opposite side of glazing or pressure applied by means of pressure-glazing stops on opposite side of glazing.

2.6 GLAZING SEALANTS

- A. General: As specified in Division 7 Section "Joint Sealants".
 1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 3. VOC Content: For sealants used inside of the weatherproofing system, not more than 250 g/L when calculated according to 40 CFR 59, Subpart D.

2.7 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
 - 1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 - 2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

2.8 MISCELLANEOUS GLAZING MATERIALS

- A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- B. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- C. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- D. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- E. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.9 GLASS TYPES

- A. Glass Type 1: Interior clear, monolithic.
 - 1. Thickness: 1/4" (6.0 mm) overall unit thickness.
 - 2. Kind FT (fully tempered).
- B. Glass Type 2: Low-e-coated, clear insulating laminated glass.
 - 1. Overall Unit Thickness: 1 inch (25 mm).
 - 2. Thickness of Outdoor Lite: 6.0 mm.
 - 3. Outdoor Lite: Clear laminated glass with two plies of fully tempered FT float glass.
 - a. Thickness of Each Glass Ply: 3.0 mm
 - b. Interlayer Thickness: 0.030 inch (0.76 mm).
 - 4. Interspace Content: Air.
 - 5. Thickness of Indoor Lite: 6.0mm
 - 6. Indoor Lite: Clear FT
 - 7. Low-E Coating: Pyrolytic on #2 surface
 - 8. Provide safety glazing labeling.
- C. Glass Type 3: Interior clear, monolithic, wired glass.

1. Thickness: 1/4" (6.0 mm) overall unit thickness.
2. Kind: HS heat strengthened.
3. Wire Pattern: Diamond.

PART 3 - EXECUTION

3.1 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.
- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).
- H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

3.2 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Apply heel bead of elastomeric sealant.

- F. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- G. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.3 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

3.4 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.5 CLEANING AND PROTECTION

- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.

- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

END OF SECTION 08800

SECTION 09240

PORTLAND CEMENT STUCCO RESTORATION

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. Section Includes:
 - 1. Removal of damaged and deteriorated areas of existing Portland Cement stucco on metal lath over unit masonry or insulation board.
 - 2. Repair of existing Portland Cement stucco and insulation board.
 - 3. Powerwash existing Portland Cement stucco surface.
 - 4. CMU facing for stucco backer.

1.3 SUBMITTALS

- A. Product Data: Provide for each type of product indicated.

1.4 QUALITY ASSURANCE

- A. Benchmark Sample: Before repairing stucco, perform a sample restoration of a small area to be identified by the Architect to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Approved benchmark samples may become part of the completed Work if undisturbed at time of Substantial Completion.
- B. Reference Portland Cement Association "Repair of Portland Cement Plaster" (IS526).

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.

1.6 PROJECT CONDITIONS

- A. Comply with ASTM C 926 requirements.

B. Exterior Stuccowork:

1. Apply and cure stucco to prevent stucco drying out during curing period. Use procedures required by climatic conditions, including moist curing, providing coverings, and providing barriers to deflect sunlight and wind.
2. Apply stucco when ambient temperature is greater than 40 deg F (4.4 deg C).
3. Protect stucco coats from freezing for not less than 48 hours after set of stucco coat has occurred.

PART 2 - PRODUCTS

2.1 METAL LATH

- A. Expanded-Metal Lath: ASTM C 847 with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Alabama Metal Industries Corporation; a Gibraltar Industries company.
 - b. CEMCO.
 - c. Clark Western Building Systems.
 - d. Dietrich Metal Framing; a Worthington Industries company.
 - e. MarinoWARE.
 - f. Phillips Manufacturing Co.
 2. Diamond-Mesh Lath: Self-furring, 2.5 lb/sq. yd. (1.4 kg/sq. m).

2.2 ACCESSORIES

- A. General: Comply with ASTM C 1063 and coordinate depth of trim and accessories with thicknesses and number of stucco coats required.
- B. Metal Accessories: Match profiles and dimensions of existing units. Provide new accessories fabricated from zinc, or where zinc is not available, from steel having a hot-dip galvanized coating complying with ASTM A 653/A 653M, G60 (Z180)
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Alabama Metal Industries Corporation; a Gibraltar Industries company.
 - b. CEMCO.
 - c. Clark Western Building Systems.
 - d. Dietrich Metal Framing; a Worthington Industries company.
 - e. MarinoWARE.
 - f. Phillips Manufacturing Co.

2.3 MISCELLANEOUS MATERIALS

- A. Water for Mixing: Potable and free of substances capable of affecting stucco set or of damaging stucco, lath, or accessories.
- B. Fasteners for Attaching Metal Lath to Substrates: Complying with ASTM C 1063.
- C. Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, not less than 0.0475-inch (1.21-mm) diameter, unless otherwise indicated.
- D. Molded, Rigid Cellular Polystyrene Board Insulation: Comply with ASTM C 578, Type I; and EIMA's "EIMA Guideline Specification for Expanded Polystyrene (EPS) Insulation Board."
 - 1. 1" thickness or as indicated on drawing.

2.4 STUCCO MATERIALS

- A. Portland Cement: ASTM C 150, Type I.
 - 1. Color for Finish Coats: Match Existing – refer to Section 1.3 Quality Assurance.
- B. Colorants for Job-Mixed Finish Coats: Colorfast mineral pigments that produce finish stucco color to match Architect's reviewed sample area.
- C. Lime: ASTM C 206, Type S; or ASTM C 207, Type S.
- D. Sand Aggregate: ASTM C 897.
 - 1. Color for Job-Mixed Finish Coats: In color matching Architect's reviewed sample area.

2.5 STUCCO MIXES

- A. General: Comply with ASTM C 926 for applications indicated.
- B. Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat stucco work as follows:
 - 1. Portland Cement Mixes:
 - a. Scratch Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material.
 - b. Brown Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 3 to 5 parts aggregate per part of cementitious material, but not less than volume of aggregate used in scratch coat.
- C. Job-Mixed Finish-Coat Mixes:
 - 1. Portland Cement Mix: For cementitious materials, mix 1 part portland cement and 1-1/2 to 2 parts lime. Use 1-1/2 to 3 parts aggregate per part of cementitious material.

2.6 CONCRETE MASONRY UNITS (STUCCO BACKER)

- A. CMUs: ASTM C 90.
 - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi (19.3 MPa).
 - 2. Density Classification: Normal weight.
 - 3. Thickness: 2" or as indicated on drawing notes.

2.7 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Masonry Cement: ASTM C 91.

2.8 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.
 - 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M; with ASTM A 153/A 153M, Class B-2 coating.
 - 2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, to verify extent and type of repair work required and other conditions affecting performance of the Work.

3.2 PREPARATION

- A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by stuccoing.
- B. Existing Portland Cement stucco surfaces should follow cleaning methods outlined in "Repair of Portland Cement Plaster (Stucco)" (IS526).

3.3 REMOVAL

- A. Cut away each unsound, de-bonded or deteriorated area using a grinder or chisel and hammer. Cut through existing lath down to masonry substrates and remove both lath and stucco materials.

1. Test stucco adjacent to areas of removal by tapping with a hammer to ensure unsound areas have been removed.
2. Avoid overcutting edges.
3. Remove stucco from lath 1-to-2 inches around the perimeter of each repair area. Clean out loose stucco behind the lath without disturbing remaining areas.
4. Cut or shear existing metal accessories (if any) within areas to be patched. To the greatest extent possible, avoid deforming portions of accessories to remain. Where necessary, deform protruding ends and edges back into the existing stucco.
5. Clean the surfaces of remaining stucco around the perimeter of the patch area using compressed air to remove stucco dust.

3.4 INSTALLING METAL LATH

- A. Expanded-Metal Lath: Install self-furring, diamond-mesh lath according to ASTM C 1063. Lap existing lath a minimum of 1-inch and mechanically fasten to masonry substrate using specified anchors. Use tie wire to connect new lath to existing.

3.5 INSTALLING ACCESSORIES

- A. If areas to be patched include existing accessories, install according to ASTM C 1063. Butt ends of new accessories against ends of existing accessories.
- B. Installing CMU backer: Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- C. Board Insulation: Adhesively or mechanically attach to substrate.

3.6 STUCCO APPLICATION

- A. Verify that area is clean and properly prepared before beginning patching work.
- B. General: Comply with ASTM C 926.
 1. Wet edges of existing stucco around perimeter of area to be patched.
 2. Do not deviate more than plus or minus 1/4 inch in 10 feet (6.4 mm in 3 m) from the plane of existing stucco surfaces.
 3. Finish stucco flush with any built-in metal items or accessories that act as a stucco ground unless otherwise indicated.
- C. Base-Coat Mixes on Metal Lath: Portland cement based scratch and brown coats for three-coat stucco work, on masonry; 3/4-inch (19-mm) thickness.
- D. Stucco Finish Coats: Apply to provide finish to match existing adjacent work.
- E. Curing: Keep final finish coats of stucco damp for 72 hours by covering with a moisture-retaining plastic sheet.

- F. Repair or replace new work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

3.7 PROTECTION

- A. Remove temporary protection and enclosure of other work. Promptly remove stucco from door frames, windows, and other surfaces not indicated to be stuccoed. Repair surfaces stained, marred, or otherwise damaged during stuccoing.

END OF SECTION 09240

SECTION 09250

GYP SUM BOARD

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. Section Includes:
 - 1. Interior gypsum board.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Control Joint Locations: Submit layout of control joint locations for architect's approval.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.
- C. Low Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 INTERIOR GYP SUM BOARD

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. American Gypsum.

2. CertainTeed Corp.
3. Georgia-Pacific Gypsum LLC.
4. Lafarge North America Inc.
5. National Gypsum Company.
6. PABCO Gypsum.
7. USG Corporation.

B. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch (15.9 mm).
2. Long Edges: Tapered.

C. Gypsum Ceiling Board: ASTM C 1396/C 1396M.

1. Thickness: 1/2 inch (12.7 mm).
2. Long Edges: Tapered.

D. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.

1. Core: 5/8 inch (15.9 mm), Type X.
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D 3273, score of 10.

2.3 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
2. Special closure: 20ga steel bent plate at door frame as detailed to be used in place of removed existing gypsum board and acoustic board.

2.4 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

2.5 AUXILIARY MATERIALS

A. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

1. Fire Resistance Rated assemblies: Comply with glass fiber requirements for assembly.
- C. Vapor Retarder: Polyethylene Vapor Retarders: ASTM D 4397, 6 mils (0.15 mm) thick, with maximum permeance rating of 0.13 perm (7.5 ng/Pa x s x sq. m). Pressure sensitive tape as recommended by vapor retarder manufacturer.

PART 3 - EXECUTION

3.1 APPLYING AND FINISHING PANELS

- A. Comply with ASTM C 840.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- D. Install trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
 1. Control Joints: Install control joints according to ASTM C 840 and in specific locations per Control Joint layout approved by Architect for visual effect. Coordinate locations prior to installing.
- E. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- F. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- G. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 2. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
- H. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- I. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION 09250

SECTION 09512

ACOUSTICAL PANEL CEILINGS

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. Section includes acoustical panels and exposed suspension systems for ceilings.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified.

1.5 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Evaluation reports.
- C. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.7 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to NVLAP.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials, 25 or less.
 - 2. Smoke-Developed Index: 50 or less.

2.2 ACOUSTICAL PANEL CEILINGS, GENERAL

- A. Acoustical Panel Standard: Comply with ASTM E 1264.
- B. Metal Suspension System Standard: Comply with ASTM C 635.
- C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

2.3 ACOUSTICAL PANELS ATC-1

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries Optima Open Plan #3151 product shown in Color and Material Schedule on drawing sheet no.16 or comparable product by one of the following:
 - 1. CertainTeed Corp.
 - 2. USG Interiors, Inc.; Subsidiary of USG Corporation.

2.4 METAL SUSPENSION SYSTEM

- A. Wide-Face, Capped, Double-Web, Fire-Rated, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, not less than G30 coating designation; with prefinished 15/16-inch wide metal caps on flanges.
 - 1. Structural Classification: Intermediate-duty system.
 - 2. End Condition of Cross Runners: butt-edge type.
 - 3. Face Design: Flush.
 - 4. Cap Material: Steel cold-rolled sheet.
 - 5. Cap Finish: Painted to match color of acoustical unit
- B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.

- C. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Armstrong World Industries, Inc.
 2. CertainTeed Corp.
 3. Chicago Metallic Corporation.
 4. USG Interiors, Inc.; Subsidiary of USG Corporation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636/C 636M, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
1. Fire-Rated Assembly: Install fire-rated ceiling systems according to tested fire-rated design.
- B. Suspend ceiling hangers from building's structural members and as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts,

- eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 6. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 7. Do not attach hangers to steel deck tabs.
 8. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 9. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
 10. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or post-installed anchors.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Apply manufacturer recommended acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
1. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
 2. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
 3. Install hold-down clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions unless otherwise indicated.
 4. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and

Katrina Related Repairs to Garage # 2 at Central Yard
Sewerage and Water Board
New Orleans, Louisiana

Contract No. 8129

Issue Date: August 19, 2011

touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09512

SECTION 09651

RESILIENT FLOOR TILE

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. Section Includes:
 - 1. Vinyl composition floor tile.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
- C. Samples: Full-size units of each color and pattern of floor tile required.
- D. Maintenance data.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.5 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer in spaces to receive floor tile.
- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer.
- C. Close spaces to traffic during floor tile installation.
- D. Close spaces to traffic for 48 hours after floor tile installation.

- E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 VINYL COMPOSITION FLOOR TILE VCT-1

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Mannington product shown in Color and Material Schedule on drawing or comparable product by one of the following:
 - 1. Armstrong World Industries, Inc.
 - 2. Congoleum Corporation
 - 3. Tarkett, Inc.
 - 4. Vinylasa Tile, Distributed by American Tile Inc.
- B. Tile Standard: ASTM F 1066, Class 2, through-pattern tile.
- C. Wearing Surface: Smooth.
- D. Thickness: 0.125 inch (3.2 mm).
- E. Size: 12 by 12 inches (305 by 305 mm).
- F. Colors and Patterns: As indicated on Color and Material Schedule on drawing.

2.2 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.
 - 1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. VCT Tile Adhesives: Not more than 50 g/L.
- C. Floor Polish: Provide protective liquid floor polish products as recommended by manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
4. Moisture Testing: Perform tests recommended by floor covering manufacture. Proceed with installation only after substrates pass testing.
 - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
 - b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75% humidity level measurement.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install floor tiles until they are same temperature as space where they are to be installed.
 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.2 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.
- G. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.3 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.
- B. Floor Polish: Remove soil, visible adhesive and surface blemishes from floor tile surfaces before applying liquid floor polish.
 - 1. Apply recommended number of coats per manufacturer's recommended guidelines.
- C. Cover floor tile until Substantial Completion.

END OF SECTION 09651

SECTION 09653

RESILIENT WALL BASE AND ACCESSORIES

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. Section Includes:
 - 1. Resilient base.
 - 2. Resilient stair accessories.
 - 3. Resilient molding accessories.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For each type of product indicated, in manufacturer's standard-size Samples but not less than 12 inches (300 mm) long, of each resilient product color, texture, and pattern required.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.5 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer in spaces to receive resilient products.
- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer.
- C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 RESILIENT BASE WB-1

- A. Resilient Base:
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:
 - a. Armstrong World Industries, Inc.
 - b. Johnsonite.
 - c. Mondo Rubber International, Inc.
 - d. Nora Rubber Flooring; Freudenberg Building Systems, Inc.
- B. Resilient Base Standard: ASTM F 1861.
1. Material Requirement: Type TS (rubber, vulcanized thermoset).
 2. Manufacturing Method: Group I (solid, homogeneous).
 3. Style: Cove (base with toe).
- C. Minimum Thickness: 0.125 inch (3.2 mm)
- D. Height: 4 inches (102 mm).
- E. Lengths: Coils in manufacturer's standard length
- F. Outside Corners: Preformed.
- G. Inside Corners: Preformed.
- H. Colors and Patterns: As shown on Color and Material Schedule on drawing.

2.2 RESILIENT STAIR ACCESSORIES RS-1

- A. Resilient Stair Treads:
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:
 - a. Burke Mercer Flooring Products; Division of Burke Industries, Inc.
 - b. Endura Rubber Flooring; Division of Burke Industries, Inc.
 - c. Estrie Products International; American Biltrite (Canada) Ltd.
 - d. Flexco, Inc.
 - e. Johnsonite.
 - f. Mondo Rubber International, Inc.
 - g. Musson, R. C. Rubber Co.
 - h. Nora Rubber Flooring; Freudenberg Building Systems, Inc.
 - i. PRF USA, Inc.
 - j. R.C.A. Rubber Company (The).
 - k. Roppe Corporation, USA.

- I. VPI, LLC; Floor Products Division.
- B. Resilient Stair Treads Standard: ASTM F 2169.
 1. Material Requirement: Type TS (rubber, vulcanized thermoset)
 - a. Class 1, Smooth (flat).
 - b. Class 2, Pattern: Raised-diamond design with abrasive strips.
 2. Manufacturing Method: Group 1, tread with embedded abrasive strips.
- C. Nosing Style: Square, adjustable to cover angles between 60 and 90 degrees..
- D. Thickness: 1/4 inch (6 mm) and tapered to back edge.
- E. Size: Lengths and depths to fit each stair tread in one piece.
- F. Risers: Smooth, flat, toeless, height and length to cover risers; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.
 1. Thickness: 0.125 inch (3.2 mm)
- G. Stringers: Of same thickness as risers, height and length after cutting to fit risers and treads and to cover stair stringers; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.
- H. Colors and Patterns: As shown on Color and Material Schedule on drawing.

2.3 RESILIENT MOLDING ACCESSORY TS-1

- A. Resilient Molding Accessory:
 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:
 - a. Burke Mercer Flooring Products; Division of Burke Industries, Inc.
 - b. Flexco, Inc.
 - c. Johnsonite.
 - d. R.C.A. Rubber Company (The).
 - e. Roppe Corporation, USA.
 - f. VPI, LLC; Floor Products Division.
- B. Description: Underslung Reducer.
- C. Material: Rubber.
- D. Profile, Dimensions, Color and Patterns: As shown on Color and Material Schedule on drawing.

2.4 INSTALLATION MATERIALS

- A. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
 - 1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Cove Base Adhesives: Not more than 50 g/L.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Do not install resilient products until they are same temperature as the space where they are to be installed.
 - 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- C. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.
- D. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

3.2 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.

3.3 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Stair Accessories:

1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
 2. Tightly adhere to substrates throughout length of each piece.
 3. For treads installed as separate, equal-length units, install to produce a flush joint between units.
- C. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of resilient floor covering that would otherwise be exposed.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.
- B. Floor Polish: Remove soil, visible adhesive, and surface blemishes from resilient stair treads before applying liquid floor polish.
1. Apply two coat(s).
- C. Cover resilient products until Substantial Completion.

END OF SECTION 09653

SECTION 09671

RESINOUS FLOORING

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. Section includes decorative resinous flooring systems.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For each type of exposed finish required.

1.4 INFORMATIONAL SUBMITTALS

- A. Material certificates.
- B. Material test reports.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of flooring systems required for this Project.
- B. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, from single source from single manufacturer. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.
- C. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Apply full-thickness mockups on 48-inch- (1200-mm-) square floor area selected by Architect.

2. Simulate finished lighting conditions for Architect's review of mockups.
- D. Preinstallation Conference: Conduct conference at Project site.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application unless manufacturer recommends a longer period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide General Polymers-Sherwin-Williams EPO-FLEX Industrial Floor System product as shown on the Color and Materials schedule on drawing or comparable product by one of the following:
 1. American Hi-Tech Flooring Company.
 2. Arizona Polymer Flooring, Inc.
 3. Atlas Minerals & Chemicals, Inc.; Polymer Flooring Division.
 4. BASF Construction Chemicals, Inc.; BASF Building Systems.
 5. ChemMasters.
 6. CornerStone Flooring & Linings.
 7. Crawford Laboratories Inc.; Florock.
 8. Crossfield Products Corp.; Dex-O-Tex.
 9. Crown Polymers, LLC.
 10. Delta Polymers, Inc.
 11. DUDICK Inc.
 12. Dur-A-Flex, Inc.
 13. Epoxy Systems, Inc.
 14. ICS Garland Inc.
 15. International Coatings Inc.
 16. ITW Resin Technologies.
 17. Key Resin Company.
 18. Marbelite International Corp.
 19. Micor Company, Inc.
 20. NEOGARD; Division of JONES-BLAIR.
 21. Northern Industries, Inc.
 22. Nox-Crete Products Group.
 23. Pacific Polymers, Inc.
 24. Palma, Inc.
 25. POLY-CARB, Inc.
 26. Polymerica, Incorporated.
 27. PolySpec.

28. PPG Industries, Inc.
29. Protective Floorings & Linings, Inc.; a division of Chesterton.
30. Sauereisen.
31. Sherwin-Williams Company; General Polymers.(Basis-of-Design product)
32. Specifier Products Inc.; Stonecarpet.
33. Stonhard, Inc.
34. Tamms Industries, Inc.; a division of The Euclid Chemical Company.
35. Tnemec Company, Inc.
36. Tufco International Inc.
37. Valspar Flooring.

2.2 DECORATIVE RESINOUS FLOORING RF-1

- A. Resinous Flooring: Abrasion-, impact- and chemical-resistant, decorative-aggregate-filled, epoxy-resin-based, monolithic floor surfacing designed to produce a seamless floor.
- B. System Characteristics:
 1. Color and Pattern: As indicated by product designation listed above.
 2. Wearing Surface: Textured for slip resistance.
 3. Overall System Thickness: 1/16 inch (1.6 mm).
- C. Primer and Intermediate coat:
 1. 1 coat 3579 Standard Primer/Binder over prepared surface followed by one coat of 3555 EPO-FLEX HD Epoxy.
- D. Non-slip Aggregate Layer:
 1. 1 coat 3555 EPO-FLEX HD EPOXY with broadcast 5310-8 Dry Silica (30 Mesh) or other hard aggregate.
- E. Topcoat:
 1. 1 coat of 3744 High Performance CR Epoxy

2.3 ACCESSORIES

- A. Primer: Type recommended by manufacturer for substrate and body coats indicated.
 1. Formulation Description: 100 percent solids.
- B. Patching and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
 - 1. Roughen concrete substrates as follows:
 - a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
 - b. Comply with ASTM C 811 requirements unless manufacturer's written instructions are more stringent.
 - 2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written instructions.
 - 3. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.
 - a. Perform plastic sheet test, ASTM D 4263. Proceed with application only after testing indicates absence of moisture in substrates.
 - 4. Alkalinity and Adhesion Testing: Verify that concrete substrates have pH within acceptable range. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.
- B. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.
- C. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- D. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written instructions.

3.2 APPLICATION

- A. General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
 - 1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
 - 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
 - 3. At substrate expansion and isolation joints, comply with resinous flooring manufacturer's written instructions.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Apply self-leveling slurry body coats in thickness indicated for flooring system.

Katrina Related Repairs to Garage # 2 at Central Yard
Sewerage and Water Board
New Orleans, Louisiana

Contract No. 8129

Issue Date: August 19, 2011

1. Broadcast aggregates at rate recommended by manufacturer and, after resin is cured, remove excess aggregates to provide surface texture indicated.
- D. Protect resinous flooring from damage and wear during the remainder of construction period.

END OF SECTION 09671

SECTION 09900

INTERIOR, EXTERIOR AND INDUSTRIAL PAINTS AND COATINGS

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 SCOPE

- A. This section specifies interior, exterior, and high-performance paint and coatings systems including surface preparation.

1.3 RELATED SECTIONS

- A. Section 08520 - Aluminum Windows
- B. Section 09250 - Gypsum Board
- C. Section 09671 - Resinous Flooring

1.4 REFERENCES

- A. Steel Structures Painting Council (SSPC):
 - 1. SSPC-SP 1 - Solvent Cleaning.
 - 2. SSPC-SP 2 - Hand Tool Cleaning.
 - 3. SSPC-SP 3 - Power Tool Cleaning.

1.5 SUBMITTALS

- A. Submit under provisions of Section 2-20, CONTRACTOR'S PLANS, SAMPLES, AND DATA.
- B. Product Data: For each paint system indicated, including:
 - 1. Product characteristics.
 - 2. Surface preparation instructions and recommendations.
 - 3. Primer requirements and finish specification.
 - 4. Storage and handling requirements and recommendations.
 - 5. Application methods.
 - 6. Cautions for storage, handling and installation.
- C. Selection Samples: Submit a complete set of color chips that represent the full range of manufacturer's color samples available.
- D. Verification Samples: For each finish product specified, submit samples that represent actual product, color, and sheen.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project.
- B. Paint exposed surfaces. If a color of finish, or a surface is not specifically mentioned,

Architect will select from standard colors and finishes available.

- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels unless indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver manufacturer's unopened containers to the work site. Packaging shall bear the manufacturer's name, label, and the following list of information:
 - 1. Product name, and type (description).
 - 2. Application and use instructions.
 - 3. Surface preparation.
 - 4. Environmental issues.
 - 5. Batch date.
 - 6. Color number.
- B. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
- C. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.
- D. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Sherwin-Williams, or approved equal
- B. Requests for substitutions will be considered in accordance with provisions of Section 2-21, SUBSTITUTE MATERIALS AND EQUIPMENT.

2.2 APPLICATIONS/SCOPE

- A. Interior, Exterior, and Industrial Paints and Coatings:
 - 1. Metal: Structural steel, handrails, joists, trusses, beams, handrails, and similar items.
 - 2. Concrete masonry units.
 - 3. Stucco surfaces.
 - 4. Gypsum Board surfaces.
 - 5. Wood surfaces, stained and varnished.

2.3 PAINT MATERIALS - GENERAL

- A. Paints and Coatings:
 - 1. Unless otherwise indicated, provide factory-mixed coatings. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use

primer categorized as "best" by the manufacturer.

- C. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required, per manufacturer's specifications.
- D. Color: Refer to Color and Material Schedule for paint colors and finishes, and as selected.
- E. Wood Filler Paste per Master Painters Institute (MPI) #91 standard.
- F. Stain per MPI #90.
- G. Varnish, Interior, Semi-Gloss per MPI #74.

2.4 INTERIOR PAINT SYSTEMS

- A. CMU
 - 1. Latex Systems
 - a. Egg-Shell Satin Finish
 - 1) 1st Coat: S-W Pro Mar Interior/Exterior Semi-Gloss Block Filler and Finish, or approved equal, (100 sq ft per gallon)
 - 2) 2nd Coat: S-W ProMar Interior/Exterior Semi-Gloss Block Filler and Finish, or approved equal, (150 sq ft per gallon)
- B. Gypsum Board surfaces
 - 1. Latex Systems
 - a. Egg-Shell Satin Finish
 - 1) 1st Coat: S-W ProMar 200 Interior Latex Egg-Shell Enamel B20W200 Series, or approved equal. (Apply at a dry film thickness of not less than 1.6 mils (0.041 mm))
 - 2) 2nd Coat: S-W ProMar 200 Interior Latex Egg-Shell Enamel B20W200 Series, or approved equal. (Apply at a dry film thickness of not less than 1.6 mils (0.041 mm))

2.5 INTERIOR HIGH PERFORMANCE PAINT SYSTEMS

- A. Metal, Interior Doors, Door Frames, and similar surfaces
 - 1. Epoxy Systems (Water Base)
 - a. Egg-Shell Finish
 - 1) 1st Coat: S-W Pro Mar Interior/Exterior Industrial Pro-Cryl Primer, B66-310 Series, or approved equal, (2-4 mils dry)
 - 2) 2nd Coat: S-W Pro Industrial Pre-Catalyzed Waterbased Epoxy, K45 Series, or approved equal, (4 mils wet, 1.5 mils dry)
 - 3) 3rd Coat: S-W Pro Industrial Pre-Catalyzed Waterbased Epoxy, K45 Series, or approved equal, (4 mils wet, 1.5 mils dry)

2.6 TRANSPARENT FINISH FOR WOOD SURFACES

- A. Interior Wood Doors, Sills, Cabinets
 - 1. Varnish over Stain system
 - a. Semi-Gloss Finish
 - 1) Stain Coat: Sherwin-Williams Wood Classics Interior Oil Stain applied per manufacturer's requirements.
 - 2) 1st coat: Sherwin Williams Wood Classics Sanding Sealer applied per manufacturer's requirements.

- 3) Topcoat: Sherwin-Williams Wood Classics Polyurethane varnish applied per manufacturer's requirements.

2.7 EXTERIOR PAINT SYSTEMS

- A. Metal, Exterior Doors, Door Frames and similar surfaces
 1. Epoxy Systems (Water Base)
 - a. Eg-Shel Finish
 - 1) 1st Coat: S-W Pro Industrial Pro-Cryl Primer, B66-310 Series, or approved equal, (2-4 mils dry)
 - 2) 2nd Coat: S-W Pro Industrial Pre-Catalyzed Waterbased Epoxy, K45 Series, or approved equal, (4 mils wet, 1.5 mils dry)
 - 3) 3rd Coat: S-W Pro Industrial Pre-Catalyzed Waterbased Epoxy, K45 Series, or approved equal, (4 mils wet, 1.5 mils dry)
- B. Masonry, Stucco
 1. Latex Systems
 - a. Satin Finish
 - 1) 1st Coat: S-W Loxon Conditioner, A24-100 Series, or approved equal, (200-300 sq ft/gal), guide white tinted for contrast with primer
 - 2) 2nd Coat: S-W Loxon Concrete and Masonry Primer, A24W8300, or approved equal, (5.3-8.0 mils wet, 2.1-3.2 mils dry), tinted for contrast with top coat
 - 3) 3rd Coat: S-W A-100 Acrylic Latex, A82-100 Series, or approved equal, (4 mils wet, 1.5 mils dry)
 - 4) 4th Coat: S-W A-100 Acrylic Latex, A82-100 Series, or approved equal, (4 mils wet, 1.5 mils dry)

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared; notify Architect of unsatisfactory conditions before proceeding. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- B. Proceed with work only after conditions have been corrected and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.

3.2 SURFACE PREPARATION

- A. General: Surfaces shall be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.
- B. Steel: Structural, Plate, And Similar Items: Should be cleaned by one or more of the surface preparations described below. Visual standards are available through the Society of Protective Coatings.
 1. Solvent Cleaning, SSPC-SP1: Remove all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants. Change rags and cleaning solution frequently so that deposits of oil and grease are not spread over additional areas in the cleaning process. Allow adequate ventilation.
 2. Hand Tool Cleaning, SSPC-SP2: Remove all loose mill scale, loose rust, and other detrimental foreign matter. Before hand tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
 3. Power Tool Cleaning, SSPC-SP3: Remove all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be

removed by this process. Before power tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.

4. Power Tool Cleaning to Bare Metal, SSPC-SP11: Metallic surfaces that are prepared according to this specification, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxide corrosion products, and other foreign matter. Slight residues of rust and paint may be left in the lower portions of pits if the original surface is pitted. Prior to power tool surface preparation, remove visible deposits of oil or grease by any of the methods specified in SSPC-SP1, Solvent Cleaning, or other agreed upon methods.
- C. CMU, Stucco surfaces: Must be clean and dry. Moisture content must be below 16%. PH must be between 5 and 9. Cure mortar for 30 days prior to application of coating. Allow 24 hours between coats

3.3 INSTALLATION

- A. General: Apply all coatings and materials according to manufacturer instructions. Mix and thin coatings according to manufacturer's recommendations.
- B. Do not apply to wet or damp surfaces..
- C. Apply coatings using methods recommended by manufacturer.
- D. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.
- E. Apply coatings at spreading rate required to achieve the manufacturers recommended dry film thickness.
- F. Regardless of number of coats specified, apply as many coats as necessary for complete hide, and uniform appearance.
- G. Inspection: The coated surface must be inspected and approved by the Architect immediately prior to each coat.

3.4 PROTECTION

- A. Protect finished coatings from damage until completion of project.
- B. Touch-up damaged coatings after substantial completion, following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

END OF SECTION 09900

**SECTION 10522
FIRE EXTINGUISHER CABINETS**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Scope Includes:
 - 1. Fire protection cabinets for the following:
 - a. Portable fire extinguishers.
- B. Related Sections:
 - 1. Section 10523 "Fire Extinguishers."

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire protection cabinets.
 - 1. Fire Protection Cabinets: Include details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.
- B. Shop Drawings: For fire protection cabinets. Include plans, elevations, sections, details, and attachments to other work.
- C. Product Schedule: Use same designations indicated on Drawings.
- D. Maintenance Data: For fire protection cabinets to include in maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Fire-Rated, Fire Protection Cabinets: Listed and labeled to comply with requirements in ASTM E 814 for fire-resistance rating of walls where they are installed.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.5 COORDINATION

- A. Coordinate size of fire protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

1.6 SEQUENCING

- A. Apply decals on field-painted, fire protection cabinets after painting is complete.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
- B. Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear)

2.2 FIRE PROTECTION CABINET

- A. Cabinet Type: Suitable for fire extinguisher
- B. Cabinet Construction: Nonrated
- C. Cabinet Material: Steel sheet.
 - 1. Shelf: Same metal and finish as cabinet.
- D. Surface-Mounted Cabinet: Cabinet box fully exposed and mounted directly on wall with no trim.
- E. Cabinet Trim Material: Same material and finish as door.
- F. Door Material: Steel sheet
- G. Door Style: Fully glazed panel with frame
- H. Door Glazing: Tempered float glass (clear)
- I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
 - 1. Provide projecting lever handle with cam-action latch
 - 2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
- J. Accessories:

1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
2. Lettered Door Handle: One-piece, cast-iron door handle with the word "FIRE" embossed into face.
3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated
 - a. Identify fire extinguisher in fire protection cabinet with the words "FIRE EXTINGUISHER"
 - 1) Location: Applied to cabinet glazing
 - 2) Application Process: Decals.
 - 3) Lettering Color: White.
 - 4) Orientation: Vertical
4. Alarm: Manufacturer's standard alarm that actuates when fire protection cabinet door is opened and that is powered by batteries

K. Finishes:

1. Manufacturer's standard baked-enamel paint for the following:
 - a. Exterior of cabinet door, and trim
 - b. Interior of cabinet and door.
2. Steel: Baked enamel or powder coat.

2.3 FABRICATION

- A. Fire Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
 1. Weld joints and grind smooth.
 2. Provide factory-drilled mounting holes.
 3. Prepare doors and frames to receive door hardware.
 4. Install door hardware at factory.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.
 1. Fabricate door frames of one-piece construction with edges flanged.
 2. Miter and weld perimeter door frames.
- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.4 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

- B. Protect mechanical finishes on exposed surfaces of fire protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish fire protection cabinets after assembly.
- D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.5 STEEL FINISHES

- A. Surface Preparation: Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning
- B. Factory Prime Finish: Apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.
- C. Baked-Enamel or Powder-Coat Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils.
 - 1. Color and Gloss: As selected by Engineer from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Determine correct locations of cabinets and ensure absence of obstructions.

3.2 INSTALLATION

- A. General: Install fire protection cabinets in locations indicated and at 54 inches above finished floor to top of cabinet.
- B. Fire Protection Cabinets: Fasten cabinets to structure, square and plumb.
 - 1. Fasten mounting brackets to inside surface of fire protection cabinets, square and plumb.
- C. Identification: Apply decals at locations indicated.

3.3 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

- C. On completion of fire protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace fire protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire protection cabinet and mounting bracket manufacturers.
- E. Replace fire protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END

**SECTION 10523
FIRE EXTINGUISHERS**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Scope includes portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.
- B. Related Sections:
 - 1. Section 10522, FIRE EXTINGUISHER CABINETS.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.
- B. Product Schedule: Use same designations indicated on Drawings.
- C. Warranty: Sample of special warranty.
- D. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.4 QUALITY ASSURANCE

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
 - 1. Provide fire extinguishers approved, listed, and labeled by FMG.

1.5 COORDINATION

- A. Coordinate type and capacity of fire extinguishers with fire protection cabinets to ensure fit and function.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure of hydrostatic test according to NFPA 10.
 - b. Faulty operation of valves or release levers.
 - 2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each fire protection cabinet and mounting bracket indicated.
 - 1. Manufacturers: Available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Amerex Corporation.
 - b. Ansul Incorporated;
 - c. Buckeye Fire Equipment Company.
 - d. Fire End & Croker Corporation.
 - e. J. L. Industries, Inc.
 - f. Kidde Residential and Commercial Division.
 - g. Larsen's Manufacturing Company.
 - h. Moon-American.
 - 2. Valves: Manufacturer's standard.
 - 3. Handles and Levers: [Manufacturer's standard.
 - 4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B
- B. Multipurpose Dry-Chemical Type in Steel Container UL-rated 4-A: 60-B:C, 10-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

2.2 MOUNTING BRACKETS

- A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall of cabinet, of sizes required for types and capacities of fire extinguishers indicated, with red baked-enamel finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine fire extinguishers for proper charging and tagging.
 - 1. Remove and replace damaged, defective, or undercharged fire extinguishers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install fire extinguishers and mounting brackets in cabinets as indicated and in compliance with requirements of authorities having jurisdiction.
- B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END

SECTION 10155

TOILET COMPARTMENTS

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. Section Includes:
 - 1. Solid-plastic enclosure compartments configured as toilet enclosures and urinal screens.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For toilet compartments. Include plans, elevations, sections, details, and attachments to other work.
- C. Samples for each exposed product and for each color and texture specified.
- D. Product certificates.
- E. Maintenance data.

1.4 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84, or another standard acceptable to authorities having jurisdiction, by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 25 or less.
 - 2. Smoke-Developed Index: 450 or less.
- B. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities" and ICC/ANSI A117.1 for toilet compartments designated as accessible.

PART 2 - PRODUCTS

2.1 SOLID-PLASTIC UNITS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Accurate Partitions Corporation.
 - 2. Ampco, Inc.
 - 3. Bradley Corporation; Mills Partitions.
 - 4. Comtec Industries/Capitol Partitions.
 - 5. Santana Products, Inc.
 - 6. Sanymetal; a Crane Plumbing company.
- B. Toilet-Enclosure Style: Floor and wall anchored.
- C. Urinal-Screen Style: Wall hung.
- D. Door, Panel , Screen, and Pilaster Construction: Solid, high-density polyethylene (HDPE) panel material, not less than 1 inch (25 mm) thick, seamless, with eased edges, no-sightline system, and with homogenous color and pattern throughout thickness of material.
 - 1. Integral Hinges: Configure doors and pilasters to receive integral hinges.
 - 2. Heat-Sink Strip: Manufacturer's standard continuous, extruded-aluminum strip fastened to exposed bottom edges of solid-plastic components to prevent burning.
 - 3. Plastic Panel Finish: One color and pattern in each room.
 - a. Color and Pattern: As selected by Architect from manufacturer's full range.
- E. Pilaster Shoes and Sleeves (Caps): Manufacturer's standard design; stainless steel.
- F. Urinal-Screen Post: Manufacturer's standard post design of material matching the thickness and construction of pilasters with shoe and sleeve (cap) matching that on the pilaster.
- G. Brackets (Fittings):
 - 1. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.

2.2 ACCESSORIES

- A. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories.
 - 1. Material: Stainless steel.
 - 2. Hinges: Manufacturer's standard paired, self-closing type that can be adjusted to hold doors open at any angle up to 90 degrees, integral hinge for solid-plastic doors.
 - 3. Latch and Keeper: Manufacturer's standard recessed latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.
 - 4. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories.

5. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors.
 6. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible.
- B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.
- C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel.

2.3 FABRICATION

- A. Floor-and-Wall-Anchored Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment at tops and bottoms of pilasters. Provide shoes and sleeves (caps) at pilasters to conceal anchorage.
- B. Urinal-Screen Posts: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment at tops and bottoms of posts. Provide shoes and sleeves (caps)] at posts to conceal anchorage.
- C. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, in-swinging doors for standard toilet compartments and 36-inch- (914-mm-) wide, out-swinging doors with a minimum 32-inch- (813-mm-) clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
- B. Clearances: Maximum 1/4 inch (6 mm) between pilasters and panels; 1/2 inch (13 mm) between panels and walls.
- C. Full Height Continuous Brackets: Secure panels to walls and to pilasters with continuous brackets. Locate wall brackets so holes for wall anchors occur in masonry or tile joints. Align brackets at pilasters with brackets at walls.

3.2 ADJUSTING

- A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors and doors in entrance screens to return doors to fully closed position.

Katrina Related Repairs to Garage # 2 at Central Yard
Sewerage and Water Board
New Orleans, Louisiana

Contract No. 8129

Issue Date: August 19, 2011

END OF SECTION 10155

SECTION 10801

TOILET AND BATH ACCESSORIES

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. Toilet and bath accessories.
- B. Related Sections include the following:
 - 1. Section 10155 "Toilet Compartments" for compartments and screens.

1.3 SUBMITTALS

- A. Setting Drawings: For cutouts required in other work; include templates, substrate preparation instructions, and directions for preparing cutouts and installing anchoring devices.
- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required. Use designations indicated in the Toilet and Bath Accessory Schedule and room designations indicated on Drawings in product schedule.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise approved by Architect.
- B. Product Options: Accessory requirements, including those for materials, finishes, dimensions, capacities, and performance, are established by specific products indicated in the Toilet and Bath Accessory Schedule.
 - 1. Products of other manufacturers with equal characteristics, as judged solely by Architect, may be provided.

1.5 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by disabled persons, proper installation, adjustment, operation, cleaning, and servicing of accessories.

- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.6 WARRANTY

- A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Manufacturer's Mirror Warranty: Written warranty, executed by mirror manufacturer agreeing to replace mirrors that develop visible silver spoilage defects within minimum warranty period indicated.
 - 1. Minimum Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering accessories that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Toilet and Bath Accessories:
 - a. A & J Washroom Accessories, Inc.
 - b. American Specialties, Inc.
 - c. Bobrick Washroom Equipment, Inc.
 - d. Bradley Corporation.
 - e. General Accessory Manufacturing Co. (GAMCO).
 - f. McKinney/Parker Washroom Accessories Corp.
- B. Available Products: Subject to compliance with requirements, Basis-of-Design products that may be incorporated into the Work are those indicated in the Toilet and Bath Accessory Schedule at the end of Part 3.

2.2 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, with No. 4 finish (satin), in 0.0312-inch (0.8-mm) minimum nominal thickness, unless otherwise indicated.
- B. Sheet Steel: ASTM A 366/A 366M, cold rolled, commercial quality, 0.0359-inch (0.9-mm) minimum nominal thickness; surface preparation and metal pretreatment as required for applied finish.
- C. Galvanized Steel Sheet: ASTM A 653/A 653M, G60 (Z180).
- D. Chromium Plating: ASTM B 456, Service Condition Number SC 2 (moderate service), nickel plus chromium electrodeposited on base metal.

- E. Baked-Enamel Finish: Factory-applied, gloss-white, baked-acrylic-enamel coating.
- F. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- G. Fasteners: Screws, bolts, and other devices of same material as accessory unit, tamper and theft resistant when exposed, and of galvanized steel when concealed.

2.3 FABRICATION

- A. General: Names or labels are not permitted on exposed faces of accessories. On interior surface not exposed to view or on back surface of each accessory, provide printed, waterproof label or stamped nameplate indicating manufacturer's name and product model number.
- B. Surface-Mounted Toilet Accessories: Unless otherwise indicated, fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with continuous stainless-steel hinge. Provide concealed anchorage where possible.
- C. Keys: Provide universal keys for internal access to accessories for servicing and re-supplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Install grab bars to withstand a downward load of at least 250 lbf (1112 N), when tested according to method in ASTM F 446.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

3.3 TOILET AND BATH ACCESSORY SCHEDULE

- A. Surface Mounted Double-Roll Toilet Tissue Dispenser T-1: Where this designation is indicated, provide stainless-steel toilet tissue dispenser complying with the following:
 - 1. Products: Bobrick Model B-2740
- B. Surface Mounted Satin Finish Stainless Steel Utility Hook T-2: Where this designation is indicated, provide stainless-steel coat hook complying with the following:

1. Products: Bobrick Model B-6707
- C. ConturaSeries Surface-Mounted Seat-Cover Dispenser T-3: Where this designation is indicated, provide stainless steel dispenser complying with the following:
 1. Product: Bobrick Model B-4221
- D. Classic Series Surface Mounted Soap Dispenser T-4: Where this designation is indicated, provide stainless steel soap dispenser complying with the following:
 1. Product: Bobrick Model B-2112
 - a. 40 fluid ounce capacity
- E. Classic Series Surface-Mounted Napkin/Tampon Vendor T-5: Where this designation is indicated, provide stainless steel vending unit complying with the following:
 1. Products: Bobrick Model B-2706 25
 - a. Single coin \$0.25 operation
- F. Surface Mounted Sanitary Napkin Disposal Unit T-6: Where this designation is indicated, provide stainless steel napkin disposal unit complying with the following:
 1. Product: Bobrick Model B-254 or B-354 as required.
- G. T-7: NOT USED
- H. Stainless Steel Grab Bar 42" T-8: Where this designation is indicated, provide stainless steel grab bar complying with the following:
 1. Product: Bobrick Model 6806.99 x 42"
 - a. Satin finish with peened gripping surface
- I. Stainless Steel Grab Bar 18" T-9: Where this designation is indicated, provide stainless steel grab bar complying with the following:
 1. Product: Bobrick Model 6806.99 x 18"
 - a. Satin finish with peened gripping surface
- J. Surface Mounted Paper Towel Dispenser T-10: Where this designation is indicated, provide stainless-steel paper towel dispenser unit complying with the following:
 1. Product: Bobrick Model B-2621
 - a. Accepts 200 C-fold or 275 Multi-fold paper towels.

END OF SECTION 10801

**SECTION 11130
LOADING DOCK EQUIPMENT**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Dock bumpers.

1.3 DEFINITIONS

- A. Operating Range: Maximum amount of travel above and below the loading dock level.
- B. Working Range: Recommended amount of travel above and below the loading dock level for which loading and unloading operations can take place.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for loading dock equipment. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings: For loading dock equipment. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 2. Wiring Diagrams: For power, signal, and control wiring.
- C. Samples for Initial Selection: For each type of dock fabric indicated.
- D. Samples for Verification: For each type of dock fabric indicated.
- E. Qualification Data: For qualified Installer.
- F. Welding certificates.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency; indicate compliance of dock levelers with requirements in MH 30.1 for determining rated capacity, which is based on comprehensive testing within last two years of current products.
 - 1. Submittal Form: According to MH 30.1, Appendix A.
- H. Warranty: Sample of special warranty.

- I. Operation and Maintenance Data: For loading dock equipment to include in operation and maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain loading dock equipment from single source from single manufacturer.
- C. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - 2. AWS D1.3, "Structural Welding Code - Sheet Steel."
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle dock components in a manner to avoid significant or permanent damage to fabric or frame.
 - 1. Comply with manufacturer's written instructions for minimum and maximum temperature requirements for storage.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of construction contiguous with loading dock equipment, including recessed pit dimensions, slopes of driveways, and heights of loading docks, by field measurements before fabrication.

1.8 WARRANTY

- A. Special Warranty for Dock Levelers: Manufacturer's standard form in which manufacturer agrees to repair or replace dock-leveler components that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including cracked or broken structural support members, load-bearing welds, and front and rear hinges.
 - b. Faulty operation of operators, control system, or hardware.
 - c. Deck plate failures including cracked plate or permanent deformation in excess of 1/4 inch (6 mm) between deck supports.
 - d. Hydraulic system failures including failure of hydraulic seals and cylinders.
 - 2. Warranty Period for Structural Assembly: 10 years from date of Substantial Completion.
 - 3. Warranty Period for Hydraulic System: 5 years from date of Substantial Completion.
 - 4. Warranty shall be for unlimited usage of leveler for the specified rated capacity over the term of the warranty.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Steel Plates, Shapes, and Bars: ASTM 36/A 36M.
- B. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from steel plate complying with ASTM A 572/A 572M, Grade 55 (380).
- C. Steel Tubing: ASTM A 500, cold formed.
- D. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

2.2 DOCK BUMPERS

- A. Manufacturers: Available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. American Floor Products Company, Inc.
 - 2. Beacon Industries, Inc.
 - 3. Chalfant Dock Equipment.
 - 4. Durable Corporation.
 - 5. Ellis Industries, Inc.
 - 6. Flexon, Inc.
 - 7. Hugger Dock Equipment Company; Division of Columbus Foam Products, Inc.
 - 8. Pawling Corporation; Architectural Products Division.
 - 9. Pentalift Equipment Corporation.
 - 10. Pioneer Loading Dock Equipment.
 - 11. Rite-Hite Corporation.
 - 12. Rol-Lift Corporation.
 - 13. SPX Dock Products - Kelley.
 - 14. SPX Dock Products - Serco.
 - 15. Super Seal Mfg. Ltd.
 - 16. Tennessee Mat Company, Inc.
 - 17. Vestil Manufacturing Company.
- B. Molded-Rubber Bumpers >: Fabricated from molded-rubber compound reinforced with nylon, rayon, or polyester cord; with Type A Shore durometer hardness of 80, plus or minus 5, when tested according to ASTM D 2240; of size and configuration indicated. Fabricate units with not less than two predrilled anchor holes.
 - 1. Configuration: As indicated on Drawings
 - 2. Thickness: 6 inches

2.3 GENERAL FINISH REQUIREMENTS

- A. Finish loading dock equipment after assembly and testing.

2.4 STEEL FINISHES

- A. Galvanizing: Hot-dip galvanize components as indicated to comply with the following:

1. ASTM A 123/A 123M for iron and steel loading dock equipment.
 2. ASTM A 153/A 153M or ASTM F 2329 for iron and steel hardware for loading dock equipment.
- B. **Galvanized-Steel Finish:** Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat in manufacturer's standard color.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of loading dock equipment.
- B. Examine roughing-in for electrical systems for loading dock equipment to verify actual locations of connections before equipment installation.
- C. Examine walls and floors of pits for suitable conditions where recessed loading dock equipment is to be installed. Pits shall be plumb and square and properly sloped for drainage from back to front of loading dock.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordinate size and location of loading dock equipment indicated to be attached to or recessed into concrete or masonry, and furnish anchoring devices with templates, diagrams, and instructions for their installation.
- B. Clean recessed pits of debris.

3.3 INSTALLATION

- A. General: Install loading dock equipment as required for a complete installation.
- B. Dock Bumpers: Attach dock bumpers to face of loading dock in a manner that complies with requirements indicated for spacing, arrangement, and position relative to top of platform and anchorage.
 1. Welded Attachment: Plug-weld anchor holes in contact with steel inserts and fillet weld at other locations.
 2. Bolted Attachment: Attach dock bumpers to preset anchor bolts embedded in concrete or to cast-in-place inserts or threaded studs welded to embedded-steel plates or angles. If preset anchor bolts, cast-in-place inserts, or threaded studs welded to embedded-steel plates or angles are not provided, attach dock bumpers by drilling and anchoring with expansion anchors and bolts.

3.4 ADJUSTING

- A. Adjust loading dock equipment to function smoothly and safely, and lubricate as recommended by manufacturer.

- B. After completing installation of exposed, factory-finished loading dock equipment, inspect exposed finishes and repair damaged finishes.

END

SECTION 15058 - COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general requirements for single-phase and polyphase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on ac power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

1.2 COORDINATION

- A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:
 - 1. Motor controllers.
 - 2. Torque, speed, and horsepower requirements of the load.
 - 3. Ratings and characteristics of supply circuit and required control sequence.
 - 4. Ambient and environmental conditions of installation location.

PART 2 - PRODUCTS

2.1 GENERAL MOTOR REQUIREMENTS

- A. Comply with NEMA MG 1 unless otherwise indicated.

2.2 MOTOR CHARACTERISTICS

- A. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet above sea level.
- B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

2.3 POLYPHASE MOTORS

- A. Description: NEMA MG 1, Design B, medium induction motor.
- B. Efficiency: Energy efficient, as defined in NEMA MG 1.

- C. Service Factor: 1.15.
- D. Rotor: Random-wound, squirrel cage.
- E. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.
- F. Temperature Rise: Match insulation rating.
- G. Insulation: Class F.
- H. Code Letter Designation:
 - 1. Motors 15 HP and Larger: NEMA starting Code F or Code G.
 - 2. Motors Smaller than 15 HP: Manufacturer's standard starting characteristic.
- I. Enclosure Material: Cast iron for motor frame sizes 324T and larger; rolled steel for motor frame sizes smaller than 324T.

2.4 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS

- A. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.

2.5 SINGLE-PHASE MOTORS

- A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:
 - 1. Permanent-split capacitor.
 - 2. Split phase.
 - 3. Capacitor start, inductor run.
 - 4. Capacitor start, capacitor run.
- B. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.
- C. Motors 1/20 HP and Smaller: Shaded-pole type.
- D. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

Katrina Related Repairs to Garage #2 at Central Yard
Sewerage and Water Board
New Orleans, Louisiana

Contract No. 8129

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PART 3 - EXECUTION (Not Applicable)

END OF SECTION 15058

SECTION 15074 - VIBRATION AND SEISMIC CONTROLS FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Restrained elastomeric isolation mounts.
 - 2. Restraining braces and cables.

1.2 PERFORMANCE REQUIREMENTS

- A. Wind-Restraint Loading:
 - 1. Basic Wind Speed: 130 MPH.
 - 2. Minimum 10 lb/sq. ft. multiplied by the maximum area of the HVAC component projected on a vertical plane that is normal to the wind direction, and 45 degrees either side of normal.

1.3 ACTION SUBMITTALS

- A. Product Data: For each product indicated.

1.4 QUALITY ASSURANCE

PART 2 - PRODUCTS

2.1 VIBRATION ISOLATORS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Ace Mountings Co., Inc.
 - 2. Amber/Booth Company, Inc.
 - 3. California Dynamics Corporation.
 - 4. Isolation Technology, Inc.
 - 5. Kinetics Noise Control.
 - 6. Mason Industries.

Issue Date: August 19, 2011

- C. **Restrained Mounts <Insert drawing designation>**: All-directional mountings with seismic restraint.
1. **Materials**: Cast-ductile-iron or welded steel housing containing two separate and opposing, oil-resistant rubber or neoprene elements that prevent central threaded element and attachment hardware from contacting the housing during normal operation.
 2. **Neoprene**: Shock-absorbing materials compounded according to the standard for bridge-bearing neoprene as defined by AASHTO.
- D. **Resilient Pipe Guides**: Telescopic arrangement of 2 steel tubes or post and sleeve arrangement separated by a minimum of 1/2-inch- thick neoprene. Where clearances are not readily visible, a factory-set guide height with a shear pin to allow vertical motion due to pipe expansion and contraction shall be fitted. Shear pin shall be removable and reinsertable to allow for selection of pipe movement. Guides shall be capable of motion to meet location requirements.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. **Multiple Pipe Supports**: Secure pipes to trapeze member with clamps approved for application by an agency acceptable to authorities having jurisdiction.
- B. to carry present and future static and seismic loads within specified loading limits.

3.2 VIBRATION-CONTROL AND SEISMIC-RESTRAINT DEVICE INSTALLATION

- A. Comply with requirements in Section 07720 "Roof Accessories" for installation of roof curbs, equipment supports, and roof penetrations.
- B. **Equipment Restraints**:
1. Install resilient bolt isolation washers on equipment anchor bolts where clearance between anchor and adjacent surface exceeds 0.125 inch.
- C. **Attachment to Structure**: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.
- D. **Drilled-in Anchors**:
1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
 2. Set anchors to manufacturer's recommended torque, using a torque wrench.

3. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.

3.3 ADJUSTING

- A. Adjust restraints to permit free movement of equipment within normal mode of operation.

END OF SECTION 15074

SECTION 15077 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Pipe labels.

1.2 ACTION SUBMITTAL

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

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Plastic Labels for Equipment:

1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.
2. Letter Color: White.
3. Background Color: Black.
4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
7. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

- B. Label Content: Include equipment's Drawing designation or unique equipment number,

2.2 PIPE LABELS

- A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

- B. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- C. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings.
 - 1. Lettering Size: At least 1-1/2 inches high.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

- A. Install or permanently fasten labels on each major item of mechanical equipment.
- B. Locate equipment labels where accessible and visible.

3.3 PIPE LABEL INSTALLATION

- A. Piping Color-Coding: Painting of piping is specified in Section 09960 "High Performance Coatings."
- B. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
 - 1. Near each valve and control device.
 - 2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
 - 3. Near major equipment items and other points of origination and termination.
- C. Pipe Label Color Schedule:
 - 1. Gas Piping:
 - a. Background Color: Yellow.
 - b. Letter Color: Black.

END OF SECTION 15077

SECTION 15086 - DUCT INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes insulating the following duct services:
 - 1. Indoor, concealed supply and outdoor air.
 - 2. Indoor, concealed return located in unconditioned space.
- B. Related Sections:
 - 1. Section 15815 "Metal Ducts" for duct liners.

1.2 ACTION SUBMITTALS

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

1.3 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
 - 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

- A. Comply with requirements in "Duct Insulation Schedule, General," "Indoor Duct and Plenum Insulation Schedule," article for where insulating materials shall be applied.
- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.
- D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

- E. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type III with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. CertainTeed Corp.; SoftTouch Duct Wrap.
 - b. Johns Manville; Microlite.
 - c. Knauf Insulation; Friendly Feel Duct Wrap.
 - d. Manson Insulation Inc.; Alley Wrap.
 - e. Owens Corning; SOFTR All-Service Duct Wrap.

2.2 ADHESIVES

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-127.
 - b. Eagle Bridges - Marathon Industries; 225.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-60/85-70.
 - d. Mon-Eco Industries, Inc.; 22-25.
 2. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-82.
 - b. Eagle Bridges - Marathon Industries; 225.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-50.
 - d. Mon-Eco Industries, Inc.; 22-25.
 2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.3 SEALANTS

A. FSK and Metal Jacket Flashing Sealants:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.
 - b. Eagle Bridges - Marathon Industries; 405.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 95-44.
 - d. Mon-Eco Industries, Inc.; 44-05.
2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: Aluminum.
6. For indoor applications, use sealants that have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.4 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

2.5 TAPES

A. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ABI, Ideal Tape Division; 491 AWF FSK.
 - b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0827.
 - c. Compac Corporation; 110 and 111.
 - d. Venture Tape; 1525 CW NT, 1528 CW, and 1528 CW/SQ.
2. Width: 3 inches.
3. Thickness: 6.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

2.6 SECUREMENTS

- A. Aluminum Bands: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch wide with wing seal or closed seal.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ITW Insulation Systems; Gerrard Strapping and Seals.
 - b. RPR Products, Inc.; Insul-Mate Strapping, Seals, and Springs.
 - c. .

PART 3 - EXECUTION

3.1 PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.2 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.
- B. Install insulation materials, vapor barriers or retarders, jackets, and thicknesses required for each item of duct system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Keep insulation materials dry during application and finishing.
- G. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- H. Install insulation with least number of joints practical.
- I. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- J. Install insulation with factory-applied jackets as follows:
 - 1. Draw jacket tight and smooth.

2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
 3. Overlap jacket longitudinal seams at least 1-1/2 inches. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.
 - a. For below ambient services, apply vapor-barrier mastic over staples.
 4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
- K. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- L. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- M. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

3.3 PENETRATIONS

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
1. Seal penetrations with flashing sealant.
 2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
 4. Seal jacket to roof flashing with flashing sealant.

3.4 INSTALLATION OF MINERAL-FIBER INSULATION

- A. Blanket Insulation Installation on Ducts and Plenums: Secure with adhesive .
1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
 2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
- B. Do not field paint aluminum or stainless-steel jackets.

3.5 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 - 1. Inspect ductwork, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to one location(s) for each duct system defined in the "Duct Insulation Schedule, General" Article.
- C. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.6 DUCT INSULATION SCHEDULE, GENERAL

- A. Plenums and Ducts Requiring Insulation:
 - 1. Indoor, concealed supply and outdoor air.
 - 2. Indoor, concealed return located in unconditioned space.

3.7 INDOOR DUCT AND PLENUM INSULATION SCHEDULE

- A. Concealed, Supply-Air Duct and Plenum Insulation: Mineral-fiber blanket, 1-1/2 inches thick and 0.75-lb/cu. ft. nominal density.
- B. Concealed, Return-Air Duct and Plenum Insulation: Mineral-fiber blanket, 1-1/2 inches thick and 0.75-lb/cu. ft. nominal density.

END OF SECTION 15086

SECTION 15111 - GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Brass ball valves.
 - 2. Bronze ball valves.
 - 3. Bronze globe valves.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of valve indicated.

1.3 QUALITY ASSURANCE

- A. ASME Compliance: ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
- B. NSF Compliance: NSF 61 for valve materials for potable-water service.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Refer to valve schedule articles for applications of valves.
- B. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- C. Valve Sizes: Same as upstream piping unless otherwise indicated.
- D. Valve Actuator Types:
 - 1. Handlever: For quarter-turn valves NPS 6 and smaller.
- E. Valve-End Connections:
 - 1. Solder Joint: With sockets according to ASME B16.

2.2 BRONZE GLOBE VALVES

A. Class 125, Bronze Globe Valves with Bronze Disc:

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:
 - a. Crane Co.; Crane Valve Group; Crane Valves.
 - b. Crane Co.; Crane Valve Group; Stockham Division.
 - c. Hammond Valve.
 - d. Kitz Corporation.
 - e. Milwaukee Valve Company.
 - f. NIBCO INC.
 - g. Powell Valves.
 - h. Red-White Valve Corporation.
 - i. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
 - j. Zy-Tech Global Industries, Inc.
2. Description:
 - a. Standard: MSS SP-80, Type 1.
 - b. CWP Rating: 200 psig.
 - c. Body Material: ASTM B 62, bronze with integral seat and screw-in bonnet.
 - d. Ends: Threaded or solder joint.
 - e. Stem and Disc: Bronze.
 - f. Packing: Asbestos free.
 - g. Handwheel: Malleable iron.

PART 3 - EXECUTION

3.1 VALVE INSTALLATION

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
- B. Locate valves for easy access and provide separate support where necessary.
- C. Install valves in horizontal piping with stem at or above center of pipe.
- D. Install valves in position to allow full stem movement.

3.2 ADJUSTING

- A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.3 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

- A. If valve applications are not indicated, use the following:
 - 1. Shutoff Service: Ball valves.
- B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP class or CWP ratings may be substituted.
- C. Select valves, except wafer types, with the following end connections:
 - 1. For Copper Tubing, NPS 2 and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules below.
 - 2. For Steel Piping, NPS 2 and Smaller: Threaded ends.

3.4 DOMESTIC, HOT- AND COLD-WATER VALVE SCHEDULE

- A. Pipe NPS 2 and Smaller:
 - 1. Bronze Valves: May be provided with solder-joint ends instead of threaded ends.
 - 2. Bronze Globe Valves: Class 125, bronze disc.

END OF SECTION 15111

SECTION 15195 - FACILITY NATURAL-GAS PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Pipes, tubes, and fittings.
 2. Valves.
 3. Pressure regulators.

1.2 PERFORMANCE REQUIREMENTS

- A. Minimum Operating-Pressure Ratings:
1. Piping and Valves: 100 psig minimum unless otherwise indicated.
 2. Service Regulators: 100 psig minimum unless otherwise indicated.
- B. Natural-Gas System Pressure within Buildings: More than 0.5 psig but not more than 2 psig.
- C. Natural-Gas System Pressures within Buildings: Two pressure ranges. Primary pressure is more than 0.5 psig but not more than 2 psig, and is reduced to secondary pressure of 0.5 psig or less.

1.3 ACTION SUBMITTALS

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

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 PIPES, TUBES, AND FITTINGS

- A. Steel Pipe: ASTM A 53/A 53M, black steel, Schedule 40, Type E or S, Grade B.
1. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern.
 2. Wrought-Steel Welding Fittings: ASTM A 234/A 234M for butt welding and socket welding.

3. Unions: ASME B16.39, Class 150, malleable iron with brass-to-iron seat, ground joint, and threaded ends.

2.2 PIPING SPECIALTIES

A. Appliance Flexible Connectors:

1. Outdoor, Appliance Flexible Connectors: Comply with ANSI Z21.75.
2. Operating-Pressure Rating: 0.5 psig.
3. End Fittings: Zinc-coated steel.
4. Threaded Ends: Comply with ASME B1.20.1.
5. Maximum Length: 72 inches

2.3 JOINING MATERIALS

- ### A. Joint Compound and Tape: Suitable for natural gas.

2.4 MANUAL GAS SHUTOFF VALVES

- ### A. General Requirements for Metallic Valves, NPS 2 and Smaller: Comply with ASME B16.33.

1. CWP Rating: 125 psig.
2. Threaded Ends: Comply with ASME B1.20.1.
3. Listing: Listed and labeled by an NRTL acceptable to authorities having jurisdiction for valves 1 inch and smaller.

- ### B. One-Piece, Bronze Ball Valve with Bronze Trim: MSS SP-110.

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:

- a. BrassCraft Manufacturing Company; a Masco company.
- b. Conbraco Industries, Inc.; Apollo Div.
- c. Lyall, R. W. & Company, Inc.
- d. McDonald, A. Y. Mfg. Co.
- e. Perfection Corporation; a subsidiary of American Meter Company.

2. Body: Bronze, complying with ASTM B 584.
3. Ball: Chrome-plated brass.
4. Stem: Bronze; blowout proof.
5. Seats: Reinforced TFE; blowout proof.
6. Packing: Separate packnut with adjustable-stem packing threaded ends.
7. Ends: Threaded, flared, or socket as indicated in "Underground Manual Gas Shutoff Valve Schedule" and "Aboveground Manual Gas Shutoff Valve Schedule" Articles.

8. CWP Rating: 600 psig.
9. Listing: Valves NPS 1 and smaller shall be listed and labeled by an NRTL acceptable to authorities having jurisdiction.
10. Service: Suitable for natural-gas service with "WOG" indicated on valve body.

C. Two-Piece, Full-Port, Bronze Ball Valves with Bronze Trim: MSS SP-110.

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:
 - a. BrassCraft Manufacturing Company; a Masco company.
 - b. Conbraco Industries, Inc.; Apollo Div.
 - c. Lyall, R. W. & Company, Inc.
 - d. McDonald, A. Y. Mfg. Co.
 - e. Perfection Corporation; a subsidiary of American Meter Company.
2. Body: Bronze, complying with ASTM B 584.
3. Ball: Chrome-plated bronze.
4. Stem: Bronze; blowout proof.
5. Seats: Reinforced TFE; blowout proof.
6. Packing: Threaded-body packnut design with adjustable-stem packing.
7. Ends: Threaded, flared, or socket as indicated in "Underground Manual Gas Shutoff Valve Schedule" and "Aboveground Manual Gas Shutoff Valve Schedule" Articles.
8. CWP Rating: 600 psig.
9. Listing: Valves NPS 1 and smaller shall be listed and labeled by an NRTL acceptable to authorities having jurisdiction.
10. Service: Suitable for natural-gas service with "WOG" indicated on valve body.

2.5 PRESSURE REGULATORS

A. General Requirements:

1. Single stage and suitable for natural gas.
2. Steel jacket and corrosion-resistant components.
3. Elevation compensator.
4. End Connections: Threaded for regulators NPS 2 and smaller.

B. Line Pressure Regulators: Comply with ANSI Z21.80.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Actaris.
 - b. American Meter Company.
 - c. Eclipse Combustion, Inc.
 - d. Fisher Control Valves and Regulators; Division of Emerson Process Management.

- e. Invensys.
 - f. Maxitrol Company.
 - g. Richards Industries; Jordan Valve Div.
2. Body and Diaphragm Case: Cast iron or die-cast aluminum.
 3. Springs: Zinc-plated steel; interchangeable.
 4. Diaphragm Plate: Zinc-plated steel.
 5. Seat Disc: Nitrile rubber resistant to gas impurities, abrasion, and deformation at the valve port.
 6. Orifice: Aluminum; interchangeable.
 7. Seal Plug: Ultraviolet-stabilized, mineral-filled nylon.
 8. Single-port, self-contained regulator with orifice no larger than required at maximum pressure inlet, and no pressure sensing piping external to the regulator.
 9. Pressure regulator shall maintain discharge pressure setting downstream, and not exceed 150 percent of design discharge pressure at shutoff.
 10. Overpressure Protection Device: Factory mounted on pressure regulator.
 11. Atmospheric Vent: Factory- or field-installed, stainless-steel screen in opening if not connected to vent piping.
 12. Maximum Inlet Pressure: 2 psig.
- C. Appliance Pressure Regulators: Comply with ANSI Z21.18.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Canadian Meter Company Inc.
 - b. Eaton Corporation; Controls Div.
 - c. Harper Wyman Co.
 - d. Maxitrol Company.
 - e. SCP, Inc.
 2. Body and Diaphragm Case: Die-cast aluminum.
 3. Springs: Zinc-plated steel; interchangeable.
 4. Diaphragm Plate: Zinc-plated steel.
 5. Seat Disc: Nitrile rubber.
 6. Seal Plug: Ultraviolet-stabilized, mineral-filled nylon.
 7. Factory-Applied Finish: Minimum three-layer polyester and polyurethane paint finish.
 8. Regulator may include vent limiting device, instead of vent connection, if approved by authorities having jurisdiction.
 9. Maximum Inlet Pressure: 1 psig.

2.6 DIELECTRIC UNIONS

A. Dielectric Unions:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Capitol Manufacturing Company.
- b. Central Plastics Company.
- c. Hart Industries International, Inc.
- d. Jomar International Ltd.
- e. Matco-Norca, Inc.
- f. McDonald, A. Y. Mfg. Co.
- g. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
- h. Wilkins; a Zurn company.

2. Description:

- a. Standard: ASSE 1079.
- b. Pressure Rating: 125 psig minimum at 180 deg F.
- c. End Connections: Solder-joint copper alloy and threaded ferrous.

PART 3 - EXECUTION

3.1 OUTDOOR PIPING INSTALLATION

- A. Comply with the International Fuel Gas Code for installation and purging of natural-gas piping.
- B. Install fittings for changes in direction and branch connections.
- C. Install pressure tap upstream and downstream from each service regulator.

3.2 VALVE INSTALLATION

- A. Install manual gas shutoff valve for each gas appliance ahead of corrugated stainless-steel tubing or copper connector.
- B. Install regulators and overpressure protection devices with maintenance access space adequate for servicing and testing.

3.3 PIPING JOINT CONSTRUCTION

- A. Threaded Joints:
 1. Thread pipe with tapered pipe threads complying with ASME B1.20.1.
 2. Cut threads full and clean using sharp dies.
 3. Ream threaded pipe ends to remove burrs and restore full inside diameter of pipe.
 4. Apply appropriate tape or thread compound to external pipe threads unless dryseal threading is specified.

5. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

3.4 HANGER AND SUPPORT INSTALLATION

- A. Install hangers for horizontal steel piping with the following maximum spacing and minimum rod sizes:
 1. NPS 1 and Smaller: Maximum span, 96 inches; minimum rod size, 3/8 inch.
 2. NPS 1-1/4: Maximum span, 108 inches; minimum rod size, 3/8 inch.
 3. NPS 1-1/2 and NPS 2: Maximum span, 108 inches; minimum rod size, 3/8 inch.

3.5 CONNECTIONS

- A. Connect to utility's gas main according to utility's procedures and requirements.
- B. Install natural-gas piping electrically continuous, and bonded to gas appliance equipment grounding conductor of the circuit powering the appliance according to NFPA 70.
- C. Install piping adjacent to appliances to allow service and maintenance of appliances.
- D. Connect piping to appliances using manual gas shutoff valves and unions. Install valve within 72 inches of each gas-fired appliance and equipment. Install union between valve and appliances or equipment.
- E. Sediment Traps: Install tee fitting with capped nipple in bottom to form drip, as close as practical to inlet of each appliance.

3.6 LABELING AND IDENTIFYING

- A. Comply with requirements in Section 15077 "Identification for HVAC Piping and Equipment" for piping and valve identification.

3.7 FIELD QUALITY CONTROL

- A. Test, inspect, and purge natural gas according to the International Fuel Gas Code and authorities having jurisdiction.
- B. Natural-gas piping will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

3.8 OUTDOOR PIPING SCHEDULE

- A. Aboveground natural-gas piping shall be the following:
 - 1. Steel pipe with malleable-iron fittings and threaded joints.

3.9 ABOVEGROUND MANUAL GAS SHUTOFF VALVE SCHEDULE

- A. Valves for pipe sizes NPS 2 and smaller at service meter shall be the following:
 - 1. Two-piece, full-port, bronze ball valves with bronze trim.
 - 2. Bronze plug valve.
- B. Distribution piping valves for pipe sizes NPS 2 and smaller shall be the following:
 - 1. Two-piece, full-port, bronze ball valves with bronze trim.
 - 2. Bronze plug valve.
- C. Valves in branch piping for single appliance shall be the following:
 - 1. One-piece, bronze ball valve with bronze trim.

END OF SECTION 15195

SECTION 15426 - DRINKING FOUNTAINS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes drinking fountains and related components.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of drinking fountains.

1.3 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For drinking fountains to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 ELECTRIC WATER COOLERS

- A. Drinking Fountains: Powder coated steel, floor mounted.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

- a. Belson Outdoors, Inc.
- b. Haws Corporation.
- c. Petersen Manufacturing Co., Inc.
- d. Sanderson Concrete Inc.
- e. Stern-Williams Co., Inc.
- f. Belson Outdoors, Inc.
- g. Halsey Taylor.
- h. Haws Corporation.

2. Standards: Comply with ICC A117.1 and NSF 61.

3. Receptor(s):

- a. Number: One.
- b. Material: Bronze.
- c. Shape: Rectangular.
- d. Bubbler: One for each receptor, with adjustable stream regulator.
- e. Drain: Grid type with NPS 1-1/4 tailpiece.

4. Controls: Push bar.

5. Access to Internal Components: Panel in pedestal.
6. Supply Piping: NPS 3/8 with shutoff valve.
7. Drain Piping: NPS 1-1/2 minimum trap and waste.

B. Drinking Fountains: Powder coated, ADA, wall mounted.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Elkay Manufacturing Co.
 - b. Filtrine Manufacturing Company.
 - c. Halsey Taylor.
 - d. Haws Corporation.
 - e. Elkay Manufacturing Co.
 - f. Filtrine Manufacturing Company.
 - g. Halsey Taylor.
 - h. Haws Corporation.
2. Standards:
 - a. Comply with ASME A112.19.3/CSA B45.4.
 - b. Comply with NSF 61.
3. Type Receptor: On horizontal support.
4. Receptor Shape: Rectangular.
5. Back Panel: Stainless-steel wall plate behind drinking fountain.
6. Bubblers: Two, with adjustable stream regulator, located on deck.
7. Control: Push bar.
8. Drain: Grid type with NPS 1-1/4 tailpiece.
9. Supply Piping: NPS 3/8 with shutoff valve.
10. Drain Piping: ASME A112.18.2/CSA B125.2, NPS 1-1/4 chrome-plated brass P-trap and waste.
11. Support: ASME A112.6.1M, Type III lavatory carrier.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in for water-supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before fixture installation.
- B. Examine walls and floors for suitable conditions where fixtures will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install fixtures level and plumb according to roughing-in drawings. For fixtures indicated for children, install at height required by authorities having jurisdiction.
- B. Set pedestal drinking fountains on floor.
- C. Install off-the-floor carrier supports, affixed to building substrate, for wall-mounted fixtures.
- D. Install water-supply piping with shutoff valve on supply to each fixture to be connected to domestic-water distribution piping. Use ball, gate, or globe valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Section 15111 "General-Duty Valves for Plumbing Piping."
- E. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.
- F. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons where required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 15097 "Escutcheons for Plumbing Piping."
- G. Seal joints between fixtures and walls using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 07920 "Joint Sealants."
- H. Adjust fixture flow regulators for proper flow and stream height.

3.3 CONNECTIONS

- A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- B. Comply with water piping requirements specified in Section 15140 "Domestic Water Piping."
- C. Install ball, gate, or globe shutoff valve on water supply to each fixture. Comply with valve requirements specified in Section 15111 "General-Duty Valves for Plumbing Piping."
- D. Comply with soil and waste piping requirements specified in Section 15150 "Sanitary Waste and Vent Piping."

3.4 CLEANING

- A. After installation, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.

Katrina Related Repairs to Garage #2 at Central Yard
Sewerage and Water Board
New Orleans, Louisiana

Contract No. 8129

Issue Date: August 19, 2011

- B. Clean fixtures, on completion of installation, according to manufacturer's written instructions.
- C. Provide protective covering for installed fixtures.
- D. Do not allow use of fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 15426

SECTION 15732 - PACKAGED, OUTDOOR, CENTRAL-STATION AIR-HANDLING UNITS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes packaged, outdoor, central-station air-handling units (rooftop units) with the following components and accessories:
 - 1. Direct-expansion cooling.
 - 2. Gas furnace.
 - 3. Integral, space temperature controls.
 - 4. Roof curbs.

1.2 DEFINITIONS

- A. Outdoor-Air Refrigerant Coil: Refrigerant coil in the outdoor-air stream to reject heat during cooling operations and to absorb heat during heating operations. "Outdoor air" is defined as the air outside the building or taken from outdoors and not previously circulated through the system.
- B. Outdoor-Air Refrigerant-Coil Fan: The outdoor-air refrigerant-coil fan in RTUs. "Outdoor air" is defined as the air outside the building or taken from outdoors and not previously circulated through the system.
- C. RTU: Rooftop unit. As used in this Section, this abbreviation means packaged, outdoor, central-station air-handling units. This abbreviation is used regardless of whether the unit is mounted on the roof or on a concrete base on ground.
- D. Supply-Air Fan: The fan providing supply-air to conditioned space. "Supply air" is defined as the air entering a space from air-conditioning, heating, or ventilating apparatus.
- E. Supply-Air Refrigerant Coil: Refrigerant coil in the supply-air stream to absorb heat (provide cooling) during cooling operations and to reject heat (provide heating) during heating operations. "Supply air" is defined as the air entering a space from air-conditioning, heating, or ventilating apparatus.

1.3 PERFORMANCE REQUIREMENTS

- A. Wind-Restraint Performance:
 - 1. Basic Wind Speed: 130 MPH.

2. Minimum 10 lb/sq. ft multiplied by the maximum area of the mechanical component projected on a vertical plane that is normal to the wind direction, and 45 degrees either side of normal.

1.4 ACTION SUBMITTALS

- A. Product Data: Include manufacturer's technical data for each RTU, including rated capacities, dimensions, required clearances, characteristics, furnished specialties, and accessories.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.6 QUALITY ASSURANCE

- A. ARI Compliance:

1. Comply with ARI 210/240 and ARI 340/360 for testing and rating energy efficiencies for RTUs.
2. Comply with ARI 270 for testing and rating sound performance for RTUs.

- B. ASHRAE Compliance:

1. Comply with ASHRAE 15 for refrigerant system safety.
2. Comply with ASHRAE 33 for methods of testing cooling and heating coils.

- C. NFPA Compliance: Comply with NFPA 90A and NFPA 90B.

- D. UL Compliance: Comply with UL 1995.

- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace components of RTUs that fail in materials or workmanship within specified warranty period.

1. Warranty Period for Compressors: Manufacturer's standard, but not less than five years from date of Substantial Completion.
2. Warranty Period for Gas Furnace Heat Exchangers: Manufacturer's standard, but not less than five years from date of Substantial Completion.
3. Warranty Period for Solid-State Ignition Modules: Manufacturer's standard, but not less than three years from date of Substantial Completion.

4. Warranty Period for Control Boards: Manufacturer's standard, but not less than three years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, 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 the product indicated on Drawings or a comparable product by one of the following:
 1. AAON, Inc.
 2. Carrier Corporation.
 3. Engineered Air.
 4. Lennox Industries Inc.
 5. McQuay International.
 6. Trane; American Standard Companies, Inc.
 7. YORK International Corporation.

2.2 CASING

- A. General Fabrication Requirements for Casings: Formed and reinforced double-wall insulated panels, fabricated to allow removal for access to internal parts and components, with joints between sections sealed.
- B. Exterior Casing Material: Galvanized steel with factory-painted finish, with pitched roof panels and knockouts with grommet seals for electrical and piping connections and lifting lugs.
- C. Inner Casing Fabrication Requirements:
 1. Inside Casing: Galvanized steel, 0.028 inch thick.
- D. Casing Insulation and Adhesive: Comply with NFPA 90A or NFPA 90B.
 1. Materials: ASTM C 1071, Type I.
 2. Thickness: 1 inch.
 3. Liner materials shall have air-stream surface coated with an erosion- and temperature-resistant coating or faced with a plain or coated fibrous mat or fabric.
 4. Liner Adhesive: Comply with ASTM C 916, Type I.
- E. Condensate Drain Pans: Formed sections of galvanized-steel sheet, a minimum of 2 inches deep.

1. Double-Wall Construction: Fill space between walls with foam insulation and seal moisture tight.
2. Drain Connections: Threaded nipple.

2.3 FANS

- A. Direct-Driven Supply-Air Fans: Double width, backward inclined, centrifugal; with permanently lubricated, motor resiliently mounted in the fan inlet. Aluminum or painted-steel wheels, and galvanized- or painted-steel fan scrolls.
- B. Belt-Driven Supply-Air Fans: Double width, forward curved, centrifugal; with permanently lubricated, single-speed motor installed on an adjustable fan base resiliently mounted in the casing. Aluminum or painted-steel wheels, and galvanized- or painted-steel fan scrolls.
- C. Condenser-Coil Fan: Propeller, mounted on shaft of permanently lubricated motor.
- D. Relief-Air Fan: Backward inclined, shaft mounted on permanently lubricated motor.

2.4 COILS

- A. Supply-Air Refrigerant Coil:
 1. Aluminum-plate fin and seamless internally grooved copper tube in steel casing with equalizing-type vertical distributor.
 2. Coil Split: Interlaced.
- B. Outdoor-Air Refrigerant Coil:
 1. Aluminum-plate fin and seamless internally grooved copper tube in steel casing with equalizing-type vertical distributor.

2.5 REFRIGERANT CIRCUIT COMPONENTS

- A. Compressor: Hermetic, scroll, mounted on vibration isolators; with internal overcurrent and high-temperature protection, internal pressure relief.
- B. Refrigeration Specialties:
 1. Refrigerant: R-410A.
 2. Expansion valve with replaceable thermostatic element.
 3. Refrigerant filter/dryer.
 4. Manual-reset high-pressure safety switch.
 5. Automatic-reset low-pressure safety switch.
 6. Minimum off-time relay.
 7. Automatic-reset compressor motor thermal overload.
 8. Brass service valves installed in compressor suction and liquid lines.

2.6 AIR FILTRATION

- A. Minimum arrestance according to ASHRAE 52.1, and a minimum efficiency reporting value (MERV) according to ASHRAE 52.2.
 - 1. Pleated: Minimum 90 percent arrestance, and MERV 7.

2.7 GAS FURNACE

- A. Description: Factory assembled, piped, and wired; complying with ANSI Z21.47 and NFPA 54.
 - 1. CSA Approval: Designed and certified by and bearing label of CSA.
- B. Burners: Stainless steel.
 - 1. Fuel: Natural gas.
 - 2. Ignition: Electronically controlled electric spark or hot-surface igniter with flame sensor.
- C. Heat-Exchanger and Drain Pan: Stainless steel.
- D. Venting: Gravity vented.
- E. Power Vent: Integral, motorized centrifugal fan interlocked with gas valve.
- F. Safety Controls:
 - 1. Gas Control Valve: Two stage.
 - 2. Gas Train: Single-body, regulated, redundant, 24-V ac gas valve assembly containing pilot solenoid valve, pilot filter, pressure regulator, pilot shutoff, and manual shutoff.

2.8 DAMPERS

- A. Outdoor-Air Damper: Linked damper blades, for 0 to 25 percent outdoor air, with motorized damper filter.

2.9 ELECTRICAL POWER CONNECTION

- A. Provide for single connection of power to unit with unit-mounted disconnect switch accessible from outside unit and control-circuit transformer with built-in overcurrent protection.

2.10 CONTROLS

- A. Control equipment and sequence of operation are specified in Section 15900 "HVAC Instrumentation and Controls."
- B. Basic Unit Controls:
 - 1. Control-voltage transformer.
 - 2. Wall-mounted thermostat or sensor with the following features:
 - a. Heat-cool-off switch.
 - b. Fan on-auto switch.
 - c. Manual] changeover.
 - d. Adjustable deadband.
 - e. Exposed set point.
 - f. Exposed indication.
 - g. Degree F indication.
 - h. Unoccupied-period-override push button.
 - i. Data entry and access port to input temperature set points, occupied and unoccupied periods, and output room temperature, supply-air temperature, operating mode, and status.

2.11 ACCESSORIES

- A. Electric heater with integral thermostat maintains minimum 50 deg F temperature in gas burner compartment.
- B. Duplex, 115-V, ground-fault-interrupter outlet with 15-A overcurrent protection. Include transformer if required. Outlet shall be energized even if the unit main disconnect is open.
- C. Filter differential pressure switch with sensor tubing on either side of filter. Set for final filter pressure loss.
- D. Hail guards of galvanized steel, painted to match casing.

2.12 ROOF CURBS

- A. Materials: Galvanized steel with corrosion-protection coating, watertight gaskets, and factory-installed wood nailer; complying with NRCA standards.
 - 1. Curb Insulation and Adhesive: Comply with NFPA 90A or NFPA 90B.
 - a. Materials: ASTM C 1071, Type I or II.
 - b. Thickness: min. 1-1/2 inches.
 - 2. Application: Factory applied with adhesive and mechanical fasteners to the internal surface of curb.

- a. Liner Adhesive: Comply with ASTM C 916, Type I.
 - b. Mechanical Fasteners: Galvanized steel, suitable for adhesive attachment, mechanical attachment, or welding attachment to duct without damaging liner when applied as recommended by manufacturer and without causing leakage in cabinet.
 - c. Liner materials applied in this location shall have air-stream surface coated with a temperature-resistant coating or faced with a plain or coated fibrous mat or fabric depending on service air velocity.
 - d. Liner Adhesive: Comply with ASTM C 916, Type I.
- B. Curb Height: 14 inches.
- C. Wind : Metal brackets compatible with the curb and casing, painted to match RTU, used to anchor unit to the curb, and designed for loads at Project site. Comply with requirements in Section 15074 "Vibration and Seismic Controls for HVAC Piping and Equipment" for wind-load requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Roof Curb: Install on roof structure or concrete base, level and secure, according to ARI Guideline B. Install RTUs on curbs and coordinate roof penetrations and flashing with roof construction specified in Section 07720 "Roof Accessories." Secure RTUs to upper curb rail, and secure curb base to roof framing or concrete base with anchor bolts.
- B. Install wind and seismic restraints according to manufacturer's written instructions. Wind and seismically restrained vibration isolation roof-curb rails are specified in Section 15074 "Vibration and Seismic Controls for HVAC Piping and Equipment."
- C. Install condensate drain, minimum connection size, with trap and indirect connection to nearest roof drain or area drain.
- D. Install piping adjacent to RTUs to allow service and maintenance.
 1. Gas Piping: Comply with applicable requirements in Section 15195 "Facility Natural-Gas Piping." Connect gas piping to burner, full size of gas train inlet, and connect with union and shutoff valve with sufficient clearance for burner removal and service.
- E. Duct installation requirements are specified in other HVAC Sections. Drawings indicate the general arrangement of ducts. The following are specific connection requirements:
 1. Install ducts to termination at top of roof curb.

2. Remove roof decking only as required for passage of ducts. Do not cut out decking under entire roof curb.
3. Connect supply ducts to RTUs with flexible duct connectors specified in Section 15820 "Duct Accessories."
4. Install return-air duct continuously through roof structure.

3.2 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.
- B. Perform tests and inspections and prepare test reports.
 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing. Report results in writing.
- C. Tests and Inspections:
 1. After installing RTUs and after electrical circuitry has been energized, test units for compliance with requirements.
 2. Inspect for and remove shipping bolts, blocks, and tie-down straps.
 3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Remove and replace malfunctioning units and retest as specified above.

3.3 CLEANING AND ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to site during other-than-normal occupancy hours for this purpose.
- B. After completing system installation and testing, adjusting, and balancing RTU and air-distribution systems, clean filter housings and install new filters.

END OF SECTION 15732

SECTION 15815 - METAL DUCTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Rectangular ducts and fittings.
 2. Round and flat oval ducts and fittings.
 3. Sheet metal materials.
 4. Sealants and gaskets.
 5. Hangers and supports.

1.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Duct hangers and supports shall withstand the effects of gravity loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"
- B. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings:
1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
 2. Factory- and shop-fabricated ducts and fittings.
 3. Elevation of top of ducts.
 4. Dimensions of main duct runs from building grid lines.
 5. Fittings.
 6. Reinforcement and spacing.
 7. Seam and joint construction.
 8. Equipment installation based on equipment being used on Project.
 9. Locations for duct accessories, including dampers, turning vanes, and access doors and panels.
 10. Hangers and supports, including methods for duct and building attachment and vibration isolation.

1.4 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for hangers and supports.
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel," for hangers and supports.

PART 2 - PRODUCTS

2.1 RECTANGULAR DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.
- B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.2 ROUND AND FLAT OVAL DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Lindab Inc.
 - b. McGill AirFlow LLC.

- c. SEMCO Incorporated.
- d. Sheet Metal Connectors, Inc.
- e. Spiral Manufacturing Co., Inc.

B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

- 1. Transverse Joints in Ducts Larger Than 60 Inches in Diameter: Flanged.

C. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.3 SHEET METAL MATERIALS

A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

- 1. Galvanized Coating Designation: G60.
- 2. Finishes for Surfaces Exposed to View: Mill phosphatized.

C. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.4 SEALANT AND GASKETS

A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.

B. Water-Based Joint and Seam Sealant:

- 1. Application Method: Brush on.
- 2. Solids Content: Minimum 65 percent.
- 3. Shore A Hardness: Minimum 20.
- 4. Water resistant.
- 5. Mold and mildew resistant.
- 6. VOC: Maximum 75 g/L (less water).

7. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
8. Service: Indoor or outdoor.
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

C. Flanged Joint Sealant: Comply with ASTM C 920.

1. General: Single-component, acid-curing, silicone, elastomeric.
2. Type: S.
3. Grade: NS.
4. Class: 25.
5. Use: O.

D. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

2.5 HANGERS AND SUPPORTS

A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.

B. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."

C. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.

D. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

E. Trapeze and Riser Supports:

1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.

B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.

- C. Install round ducts in maximum practical lengths.
- D. Install ducts with fewest possible joints.
- E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.
- F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.
- G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.
- H. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.
- I. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.
- J. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.

3.2 DUCT SEALING

- A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- B. Seal ducts to the following seal classes according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":
 - 1. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
 - 2. Unconditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class B.
 - 3. Unconditioned Space, Return-Air Ducts: Seal Class B.

3.3 HANGER AND SUPPORT INSTALLATION

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."
- B. Building Attachments: structural-steel fasteners appropriate for construction materials to which hangers are being attached.
- C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2,

"Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.

- D. Hangers Exposed to View: Threaded rod and angle or channel supports.
- E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.
- F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.4 CONNECTIONS

- A. Make connections to equipment with flexible connectors complying with Section 15820 "Duct Accessories."
- B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.5 DUCT CLEANING

- A. Clean new and existing duct system(s) before testing, adjusting, and balancing.
- B. Use service openings for entry and inspection.
 - 1. Create new openings and install access panels appropriate for duct static-pressure class if required for cleaning access. Provide insulated panels for insulated or lined duct. Patch insulation and liner as recommended by duct liner manufacturer. Comply with Section 15820 "Duct Accessories" for access panels and doors.
 - 2. Disconnect and reconnect flexible ducts as needed for cleaning and inspection.
 - 3. Remove and reinstall ceiling to gain access during the cleaning process.
- C. Particulate Collection and Odor Control:
 - 1. When venting vacuuming system inside the building, use HEPA filtration with 99.97 percent collection efficiency for 0.3-micron-size (or larger) particles.
 - 2. When venting vacuuming system to outdoors, use filter to collect debris removed from HVAC system, and locate exhaust downwind and away from air intakes and other points of entry into building.
- D. Clean the following components by removing surface contaminants and deposits:
 - 1. Air outlets and inlets (registers, grilles, and diffusers).

2. Supply, return, and exhaust fans including fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers, and drive assemblies.
3. Air-handling unit internal surfaces and components including mixing box, coil section, air wash systems, spray eliminators, condensate drain pans, humidifiers and dehumidifiers, filters and filter sections, and condensate collectors and drains.
4. Coils and related components.
5. Return-air ducts, dampers, actuators, and turning vanes except in ceiling plenums and mechanical equipment rooms.
6. Supply-air ducts, dampers, actuators, and turning vanes.
7. Dedicated exhaust and ventilation components and makeup air systems.

E. Mechanical Cleaning Methodology:

1. Clean metal duct systems using mechanical cleaning methods that extract contaminants from within duct systems and remove contaminants from building.
2. Use vacuum-collection devices that are operated continuously during cleaning. Connect vacuum device to downstream end of duct sections so areas being cleaned are under negative pressure.
3. Use mechanical agitation to dislodge debris adhered to interior duct surfaces without damaging integrity of metal ducts, duct liner, or duct accessories.
4. Clean fibrous-glass duct liner with HEPA vacuuming equipment; do not permit duct liner to get wet. Replace fibrous-glass duct liner that is damaged, deteriorated, or delaminated or that has friable material, mold, or fungus growth.
5. Clean coils and coil drain pans according to NADCA 1992. Keep drain pan operational. Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.
6. Provide drainage and cleanup for wash-down procedures.
7. Antimicrobial Agents and Coatings: Apply EPA-registered antimicrobial agents if fungus is present. Apply antimicrobial agents according to manufacturer's written instructions after removal of surface deposits and debris.

3.6 START UP

- A. Air Balance: Comply with requirements in Section 15950 "Testing, Adjusting, and Balancing."

3.7 DUCT SCHEDULE

- A. Fabricate ducts with galvanized sheet steel.
- B. Elbow Configuration:
 1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."
 - a. Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.

- b. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
 - c. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
2. Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "Round Duct Elbows."
- a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 3-1, "Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.
 - 1) Velocity 1000 fpm or Lower: 0.5 radius-to-diameter ratio and three segments for 90-degree elbow.
 - 2) Velocity 1000 to 1500 fpm: 1.0 radius-to-diameter ratio and four segments for 90-degree elbow.
 - 3) Velocity 1500 fpm or Higher: 1.5 radius-to-diameter ratio and five segments for 90-degree elbow.
 - 4) Radius-to Diameter Ratio: 1.5.
 - b. Round Elbows, 12 Inches and Smaller in Diameter: Stamped or pleated.
 - c. Round Elbows, 14 Inches and Larger in Diameter: Standing seam.
- C. Branch Configuration:
- 1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."
 - a. Rectangular Main to Rectangular and Flat Oval Branch: 45-degree entry.
 - b. Rectangular Main to Round Branch: Spin in.
 - 2. Round: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees." Saddle taps are permitted in existing duct.
 - a. Velocity 1000 fpm or Lower: 90-degree tap.
 - b. Velocity 1000 to 1500 fpm: Conical tap.

END OF SECTION 15815

SECTION 15820 - DUCT ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Manual volume dampers.
 2. Control dampers.
 3. Turning vanes.
 4. Flexible connectors.
 5. Flexible ducts.
 6. Duct accessory hardware.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For duct accessories. Include plans, elevations, sections, details and attachments to other work.
1. Detail duct accessories fabrication and installation in ducts and other construction. Include dimensions, weights, loads, and required clearances; and method of field assembly into duct systems and other construction. Include the following:
 - a. Special fittings.
 - b. Manual volume damper installations.
 - c. Control-damper installations.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

- A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."
- B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless

otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

2.2 MATERIALS

- A. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
 - 1. Galvanized Coating Designation: G60.
 - 2. Exposed-Surface Finish: Mill phosphatized.
- B. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.
- C. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.3 MANUAL VOLUME DAMPERS

- A. Standard, Steel, Manual Volume Dampers:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Air Balance Inc.; a division of Mestek, Inc.
 - b. American Warming and Ventilating; a division of Mestek, Inc.
 - c. Flexmaster U.S.A., Inc.
 - d. McGill AirFlow LLC.
 - e. Nailor Industries Inc.
 - f. Pottorff.
 - g. Ruskin Company.
 - 2. Standard leakage rating.
 - 3. Suitable for horizontal or vertical applications.
 - 4. Frames:
 - a. Frame: Hat-shaped, 0.094-inch- thick, galvanized sheet steel.
 - b. Mitered and welded corners.
 - c. Flanges for attaching to walls and flangeless frames for installing in ducts.
 - 5. Blades:
 - a. Multiple or single blade.
 - b. Stiffen damper blades for stability.
 - c. Galvanized-steel, 0.064 inch thick.
 - 6. Blade Axles: Galvanized steel.
 - 7. Bearings:

- a. Oil-impregnated bronze.
 - b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
8. Tie Bars and Brackets: Galvanized steel.
- B. Standard, Aluminum, Manual Volume Dampers:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Air Balance Inc.; a division of Mestek, Inc.
 - b. American Warming and Ventilating; a division of Mestek, Inc.
 - c. McGill AirFlow LLC.
 - d. Nailor Industries Inc.
 - e. Pottorff.
 - f. Ruskin Company.
 2. Standard leakage rating.
 3. Suitable for horizontal or vertical applications.
 4. Frames: Hat-shaped, 0.10-inch- thick, aluminum sheet channels; frames with flanges for attaching to walls and flangeless frames for installing in ducts.
 5. Blades:
 - a. Multiple or single blade.
 - b. Stiffen damper blades for stability.
 - c. Roll-Formed Aluminum Blades: 0.10-inch- thick aluminum sheet.
 6. Blade Axles: Galvanized steel.
 7. Bearings:
 - a. Oil-impregnated bronze.
 - b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
 8. Tie Bars and Brackets: Aluminum.
- C. Jackshaft:
1. Size: 0.5-inch diameter.
 2. Material: Galvanized-steel pipe rotating within pipe-bearing assembly mounted on supports at each mullion and at each end of multiple-damper assemblies.
 3. Length and Number of Mountings: As required to connect linkage of each damper in multiple-damper assembly.
- D. Damper Hardware:

1. Zinc-plated, die-cast core with dial and handle made of 3/32-inch- thick zinc-plated steel, and a 3/4-inch hexagon locking nut.
2. Include center hole to suit damper operating-rod size.
3. Include elevated platform for insulated duct mounting.

2.4 CONTROL DAMPERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. American Warming and Ventilating; a division of Mestek, Inc.
2. Arrow United Industries; a division of Mestek, Inc.
3. Cesco Products; a division of Mestek, Inc.
4. Greenheck Fan Corporation.
5. Lloyd Industries, Inc.
6. McGill AirFlow LLC.
7. Metal Form Manufacturing, Inc.
8. Nailor Industries Inc.
9. NCA Manufacturing, Inc.
10. Pottorff.
11. Ruskin Company.

B. Frames:

1. Hat shaped.
2. 0.094-inch- thick, galvanized sheet steel.
3. Mitered and welded corners.

C. Blades:

1. Multiple blade with maximum blade width of 6 inches.
2. Parallel- and opposed-blade design.
3. Galvanized-steel.
4. 0.064 inch thick single skin.
5. Blade Edging: Closed-cell neoprene.

D. Blade Axles: 1/2-inch- diameter; galvanized steel; blade-linkage hardware of zinc-plated steel and brass; ends sealed against blade bearings.

1. Operating Temperature Range: From minus 40 to plus 200 deg F.

E. Bearings:

1. Oil-impregnated bronze.
2. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
3. Thrust bearings at each end of every blade.
4. mounted.

2.5 TURNING VANES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Ductmate Industries, Inc.
 2. Duro Dyne Inc.
 3. Elgen Manufacturing.
 4. METALAIRE, Inc.
 5. SEMCO Incorporated.
 6. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Manufactured Turning Vanes for Metal Ducts: Curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.
- C. General Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 4-3, "Vanes and Vane Runners," and 4-4, "Vane Support in Elbows."
- D. Vane Construction: Single wall.

2.6 FLEXIBLE CONNECTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Ductmate Industries, Inc.
 2. Duro Dyne Inc.
 3. Elgen Manufacturing.
 4. Ventfabrics, Inc.
 5. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Materials: Flame-retardant or noncombustible fabrics.
- C. Coatings and Adhesives: Comply with UL 181, Class 1.
- D. Metal-Edged Connectors: Factory fabricated with a fabric strip 3-1/2 inches wide attached to two strips of 2-3/4-inch- wide, 0.028-inch- thick, galvanized sheet steel or 0.032-inch- thick aluminum sheets. Provide metal compatible with connected ducts.
- E. Indoor System, Flexible Connector Fabric: Glass fabric double coated with neoprene.
1. Minimum Weight: 26 oz./sq. yd..
 2. Tensile Strength: 480 lbf/inch in the warp and 360 lbf/inch in the filling.
 3. Service Temperature: Minus 40 to plus 200 deg F.

2.7 FLEXIBLE DUCTS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Flexmaster U.S.A., Inc.
 - 2. McGill AirFlow LLC.
 - 3. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Insulated, Flexible Duct: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helically wound, spring-steel wire; fibrous-glass insulation; polyethylene vapor-barrier film.
 - 1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
 - 2. Maximum Air Velocity: 4000 fpm.
 - 3. Temperature Range: Minus 20 to plus 210 deg F.
 - 4. Insulation R-value: Comply with ASHRAE/IESNA 90.1.
- C. Flexible Duct Connectors:
 - 1. Clamps: Nylon strap in sizes 3 through 18 inches, to suit duct size.

2.8 DUCT ACCESSORY HARDWARE

- A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments and of length to suit duct-insulation thickness.
- B. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.
- B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless-steel accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts.
- C. Install control dampers at inlet of exhaust fans or exhaust ducts as close as possible to exhaust fan unless otherwise indicated.

- D. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts. Where dampers are installed in ducts having duct liner, install dampers with hat channels of same depth as liner, and terminate liner with nosing at hat channel.
 - 1. Install steel volume dampers in steel ducts.
 - 2. Install aluminum volume dampers in aluminum ducts.
- E. Set dampers to fully open position before testing, adjusting, and balancing.
- F. Install test holes at fan inlets and outlets and elsewhere as indicated.
- G. Install flexible connectors to connect ducts to equipment.
- H. Connect diffusers or light troffer boots to ducts with maximum 60-inch lengths of flexible duct clamped or strapped in place.
- I. Connect flexible ducts to metal ducts with adhesive.
- J. Install duct test holes where required for testing and balancing purposes.

3.2 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. Operate dampers to verify full range of movement.
 - 2. Inspect locations of access doors and verify that purpose of access door can be performed.
 - 3. Operate fire and smoke dampers to verify full range of movement and verify that proper heat-response device is installed.
 - 4. Inspect turning vanes for proper and secure installation.

END OF SECTION 15820

SECTION 15855 - DIFFUSERS, REGISTERS, AND GRILLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Perforated diffusers.
 2. Adjustable bar registers.
 3. Fixed face grilles.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated, include the following:
1. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.
 2. Diffuser, Register, and Grille Schedule: Indicate drawing designation, room location, quantity, model number, size, and accessories furnished.
- B. Samples: For each exposed product and for each color and texture specified.

PART 2 - PRODUCTS

2.1 CEILING DIFFUSERS

- A. Perforated Diffuser CD:
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Air Research Diffuser Products, Inc.
 - b. A-J Manufacturing Co., Inc.
 - c. Anemostat Products; a Mestek company.
 - d. Carnes.
 - e. Hart & Cooley Inc.
 - f. Krueger.
 - g. METALAIRE, Inc.
 - h. Nailor Industries Inc.
 - i. Price Industries.
 - j. Titus.
 - k. Tuttle & Bailey.

2. Material: Steel backpan and pattern controllers, with steel face.
3. Finish: Baked enamel, white.
4. Duct Inlet: Round.
5. Face Style: Flush.
6. Mounting: Plaster frame.
7. Pattern Controller: Four or two louvered deflector patches see contract drawings.
8. Dampers: Opposed blade.
9. Accessories:
 - a. Equalizing grid.
 - b. Plaster ring.

2.2 REGISTERS AND GRILLES

A. Adjustable Bar Register HSR:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. A-J Manufacturing Co., Inc.
 - b. Anemostat Products; a Mestek company.
 - c. Carnes.
 - d. Dayus Register & Grille Inc.
 - e. Hart & Cooley Inc.
 - f. Krueger.
 - g. METALAIRE, Inc.
 - h. Nailor Industries Inc.
 - i. Price Industries.
 - j. Titus.
2. Material: Steel.
3. Finish: Baked enamel, white.
4. Face Blade Arrangement: Horizontal spaced 3/4 inch apart.
5. Core Construction: Integral.
6. Rear-Blade Arrangement: Vertical spaced 3/4 inch apart.
7. Frame: 1 inch wide.
8. Mounting: Countersunk screw.
9. Damper Type: Adjustable opposed blade.
10. Accessories:
 - a. Front-blade gang operator.

B. Fixed Face Grille CG:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. A-J Manufacturing Co., Inc.

- b. Anemostat Products; a Mestek company.
 - c. Carnes.
 - d. Dayus Register & Grille Inc.
 - e. Hart & Cooley Inc.
 - f. Krueger.
 - g. Nailor Industries Inc.
 - h. Price Industries.
 - i. Titus.
 - j. Tuttle & Bailey.
- 2. Material: Steel.
 - 3. Finish: Baked enamel, white.
 - 4. Face Arrangement: Perforated core.
 - 5. Core Construction: Removable.
 - 6. Frame: 1 inch wide.
 - 7. Mounting Frame: Plaster and T-Bar.
 - 8. Mounting: Lay in.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install diffusers, registers, and grilles level and plumb.
- B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Make final locations where indicated, as much as practical. For units installed in lay-in ceiling panels, locate units in the center of panel. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.
- C. Install diffusers, registers, and grilles with airtight connections to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

3.2 ADJUSTING

- A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

END OF SECTION 15855

SECTION 15940 - SEQUENCE OF OPERATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes control sequences for HVAC systems, subsystems, and equipment.
- B. See Section 15900 "HVAC Instrumentation and Controls" for control equipment and devices and for submittal requirements.

1.2 ROOFTOP UNIT CONTROL SEQUENCES

- A. Cooling:
 - 1. The RTU shall remain on during occupied hours. The RTU shall cycle the cooling system to maintain a setpoint of 76°F (adj.).
 - 2. During Un-Occupied ours the RTU shall remain off and cycle ON when the indoor temperature rises above the unoccupied set point of 80°F (adj.).
- B. Heating:
 - 1. The RTU shall remain ON during occupied hours. The RTU shall cycle the heating system to maintain a setpoint of 72°F (adj.).
 - 2. During Un-Occupied ours the RTU shall remain OFF and cycle ON when the indoor temperature falls below the unoccupied set point of 68°F (adj.).

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 15940

SECTION 15950 - TESTING, ADJUSTING, AND BALANCING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Balancing Air Systems:
 - a. Constant-volume air systems.

1.2 DEFINITIONS

- A. AABC: Associated Air Balance Council.
- B. NEBB: National Environmental Balancing Bureau.
- C. TAB: Testing, adjusting, and balancing.
- D. TABB: Testing, Adjusting, and Balancing Bureau.
- E. TAB Specialist: An entity engaged to perform TAB Work.

1.3 INFORMATIONAL SUBMITTALS

- A. Certified TAB reports.

1.4 QUALITY ASSURANCE

- A. TAB Contractor Qualifications: Engage a TAB entity certified by AABC NEBB or TABB.
 - 1. TAB Technician: Employee of the TAB contractor and who is certified by AABC NEBB or TABB as a TAB technician.
- B. Certify TAB field data reports and perform the following:
 - 1. Review field data reports to validate accuracy of data and to prepare certified TAB reports.
 - 2. Certify that the TAB team complied with the approved TAB plan and the procedures specified and referenced in this Specification.
- C. TAB Report Forms: Use standard TAB contractor's forms approved by Commissioning Authority.

- D. Instrumentation Type, Quantity, Accuracy, and Calibration: As described in ASHRAE 111, Section 5, "Instrumentation."

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment.
- B. Examine systems for installed balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are accessible.
- C. Examine the approved submittals for HVAC systems and equipment.
- D. Examine ceiling plenums and underfloor air plenums used for supply, return, or relief air to verify that they meet the leakage class of connected ducts as specified in Section 15815 "Metal Ducts" and are properly separated from adjacent areas. Verify that penetrations in plenum walls are sealed and fire-stopped if required.
- E. Examine equipment performance data including fan curves.
 - 1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
 - 2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.
- F. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- G. Examine test reports specified in individual system and equipment Sections.
- H. Examine HVAC equipment and filters and verify that bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.
- I. Examine strainers. Verify that startup screens are replaced by permanent screens with indicated perforations.

- J. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
- K. Examine operating safety interlocks and controls on HVAC equipment.
- L. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.2 PREPARATION

- A. Prepare a TAB plan that includes strategies and step-by-step procedures.
- B. Complete system-readiness checks and prepare reports. Verify the following:
 - 1. Permanent electrical-power wiring is complete.
 - 2. Automatic temperature-control systems are operational.
 - 3. Equipment and duct access doors are securely closed.
 - 4. Balance, smoke, and fire dampers are open.
 - 5. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.
 - 6. Windows and doors can be closed so indicated conditions for system operations can be met.

3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system according to the procedures contained in SMACNA's "HVAC Systems - Testing, Adjusting, and Balancing" and in this Section.
- B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.
 - 1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
 - 2. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Section 15086 "Duct Insulation."
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.
- B. Prepare schematic diagrams of systems' "as-built" duct layouts.
- C. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.
- D. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.
- E. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
- F. Verify that motor starters are equipped with properly sized thermal protection.
- G. Check dampers for proper position to achieve desired airflow path.
- H. Check for airflow blockages.
- I. Check condensate drains for proper connections and functioning.
- J. Check for proper sealing of air-handling-unit components.
- K. Verify that air duct system is sealed as specified in Section 15815 "Metal Ducts."

3.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

- A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.
 - 1. Measure total airflow.
 - a. Where sufficient space in ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow.
 - 2. Measure fan static pressures as follows to determine actual static pressure:
 - a. Measure outlet static pressure as far downstream from the fan as practical and upstream from restrictions in ducts such as elbows and transitions.
 - b. Measure static pressure directly at the fan outlet or through the flexible connection.
 - c. Measure inlet static pressure of single-inlet fans in the inlet duct as near the fan as possible, upstream from the flexible connection, and downstream from duct restrictions.

- d. Measure inlet static pressure of double-inlet fans through the wall of the plenum that houses the fan.
 3. Measure static pressure across each component that makes up an air-handling unit, rooftop unit, and other air-handling and -treating equipment.
 - a. Report the cleanliness status of filters and the time static pressures are measured.
 4. Measure static pressures entering and leaving other devices, such as sound traps, heat-recovery equipment, and air washers, under final balanced conditions.
 5. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
 6. Obtain approval from Engineer for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in Sections for air-handling units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.
 7. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload will occur. Measure amperage in full-cooling, full-heating, and any other operating mode to determine the maximum required brake horsepower.
- B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows within specified tolerances.
 1. Measure airflow of submain and branch ducts.
 - a. Where sufficient space in submain and branch ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow for that zone.
 2. Measure static pressure at a point downstream from the balancing damper, and adjust volume dampers until the proper static pressure is achieved.
 3. Remeasure each submain and branch duct after all have been adjusted. Continue to adjust submain and branch ducts to indicated airflows within specified tolerances.
- C. Measure air outlets and inlets without making adjustments.
 1. Measure terminal outlets using a direct-reading hood or outlet manufacturer's written instructions and calculating factors.
- D. Adjust air outlets and inlets for each space to indicated airflows within specified tolerances of indicated values. Make adjustments using branch volume dampers rather than extractors and the dampers at air terminals.

1. Adjust each outlet in same room or space to within specified tolerances of indicated quantities without generating noise levels above the limitations prescribed by the Contract Documents.
2. Adjust patterns of adjustable outlets for proper distribution without drafts.

3.6 PROCEDURES FOR TESTING, ADJUSTING, AND BALANCING EXISTING SYSTEMS

- A. Perform testing and balancing of existing systems to the extent that existing systems are affected by the renovation work.
 1. Compare the indicated airflow of the renovated work to the measured fan airflows, and determine the new fan speed and the face velocity of filters and coils.
 2. Verify that the indicated airflows of the renovated work result in filter and coil face velocities and fan speeds that are within the acceptable limits defined by equipment manufacturer.
 3. If calculations increase or decrease the air flow rates and water flow rates by more than 5 percent, make equipment adjustments to achieve the calculated rates. If increase or decrease is 5 percent or less, equipment adjustments are not required.
 4. Balance each air outlet.

3.7 TOLERANCES

- A. Set HVAC system's air flow rates and water flow rates within the following tolerances:
 1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 10 percent.
 2. Air Outlets and Inlets: Plus or minus 10 percent.

3.8 REPORTING

- A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for systems' balancing devices. Recommend changes and additions to systems' balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.

3.9 FINAL REPORT

- A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.

1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
 2. Include a list of instruments used for procedures, along with proof of calibration.
- B. Final Report Contents: In addition to certified field-report data, include the following:
1. Fan curves.
 2. Manufacturers' test data.
 3. Field test reports prepared by system and equipment installers.
 - 4.
- C. General Report Data: In addition to form titles and entries, include the following data:
1. Title page.
 2. Name and address of the TAB contractor.
 3. Project name.
 4. Project location.
 5. Architect's name and address.
 6. Engineer's name and address.
 7. Contractor's name and address.
 8. Report date.
 9. Signature of TAB supervisor who certifies the report.
 10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
 11. Summary of contents including the following:
 - a. Indicated versus final performance.
 - b. Notable characteristics of systems.
 - c. Description of system operation sequence if it varies from the Contract Documents.
 12. Nomenclature sheets for each item of equipment.
 13. Notes to explain why certain final data in the body of reports vary from indicated values.
 14. Test conditions for fan performance forms including the following:
 - a. Settings for outdoor-, return-, and exhaust-air dampers.
 - b. Conditions of filters.
 - c. Fan drive settings including settings and percentage of maximum pitch diameter.
 - d. Other system operating conditions that affect performance.
- D. System Diagrams: Include schematic layouts of air distribution systems. Present each system with single-line diagram and include the following:
1. Quantities of outdoor, supply, return, and exhaust airflows.
 2. Duct, outlet, and inlet sizes.
 3. Balancing stations.
 4. Position of balancing devices.

3.10 ADDITIONAL TESTS

- A. Within 90 days of completing TAB, perform additional TAB to verify that balanced conditions are being maintained throughout and to correct unusual conditions.
- B. Seasonal Periods: If initial TAB procedures were not performed during near-peak summer and winter conditions, perform additional TAB during near-peak summer and winter conditions.

END OF SECTION 15950

SECTION 4

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

In accordance with the adoption of Resolution R231-97, the Sewerage and Water Board of New Orleans has established a race and gender-neutral Disadvantaged Business Enterprise (DBE) Plan. As part of that Plan, on any publicly bid goods and services (which shall include professional and non-professional services) project, not involving funds from a source other than the Sewerage and Water Board of New Orleans, the prime contractor shall be required to make a demonstrated good faith effort to award **36%** of the amount of the contract to certified disadvantaged business enterprises as **subcontractors or suppliers performing commercial useful functions which are consistent with the work required on this contract**. The percent participation having been determined for this specific contract by recommendation of the **Construction Review Committee (CRC)**, which is a joint effort of representatives from the City of New Orleans, Sewerage and Water Board, and representatives of local contractor organizations. This percentage requirement shall be considered an informality which is subject to modifications and may be waived or adjusted by the Sewerage and Water Board of New Orleans if the prime contractor, after having demonstrated a good faith effort, is unable to comply with the requirement.

DEMONSTRATED GOOD FAITH EFFORTS

Before receiving an award of the contract, the contractor must meet the DBE goals or prove that he/she has made a demonstrated good faith efforts. To determine whether a particular contract bidder has made demonstrated good faith efforts to reach the DBE participation goal, the Board and its staff will consider the following:

- a. whether the contractor attended all pre-bid meetings that may have been scheduled by the Board to inform DBE firms of subcontracting opportunities and/or requested the Board Directory of Certified DBE firms;
- b. whether the contractor advertised in general circulation and trade association publications, concerning the DBE subcontracting opportunities, and allowed the subcontractors reasonable time to respond;
- c. whether the contractor provided written notice to a reasonable number of individually named DBE firms and allowed sufficient time for the DBE firms to participate effectively;

- d.** whether the contractor followed up initial solicitations of interest by contacting DBEs to determine with certainty whether the DBEs were interested in bidding;
- e.** whether the contractor selected specific portions of the work to be performed by DBEs in order to increase the likelihood of meeting the DBE goals (including breaking down contracts into smaller units to facilitate DBE participation);
- f.** whether the contractor provided interested DBEs with adequate information about the plans, specifications and requirements of the contract;
- g.** whether the contractor negotiated in “good faith” with interested DBEs and did not reject DBEs as unqualified without sound reasons based on a thorough investigation of their capabilities;
- h.** if the contractor did reject a DBE as unqualified, the contractor must state his or her reason for doing so in writing;
- i.** whether the contractor has used the services of available community organizations and small and/or disadvantaged business groups; local, state and federal small or disadvantage business assistance offices; and other organizations that provide assistance in the recruitment and placement of DBE firms;
- j.** whether the contractor has made sufficient efforts to negotiate with DBEs for specific sub-bids, including at a minimum:
 - (1)** names, addresses, telephone numbers of DBEs that the contractor contacted,
 - (2)** a description of information provided to those DBE firms, and
 - (3)** a statement of why additional agreements with DBEs were not reached to include but not limited to proof the DBEs’ price exceeded that of non-DBEs.

1. **Policy:**

It is the policy of the Board that DBE firms, as defined in the Board's Disadvantaged Business Enterprise Plan, shall have the maximum allowable opportunity to compete for the award of the participation in the performance of the Board's publicly bid contracts. Consequently, the CRC and the Board have set the DBE participation goal applicable to this construction contract.

2. **DBE Obligation:**

The Board and its contractors agree to ensure that DBE's, as defined in the Board's Disadvantaged Business Enterprises Plan, shall have the maximum allowable opportunity to compete for the award of the participation in the performance of contracts and subcontracts provided under this agreement. In this regard, contractors shall take all necessary and reasonable steps in accordance with this DBE Plan to ensure that DBE's have the maximum allowable opportunity to compete for such contracts. The Board and its contractors shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of the Board's publicly bid contracts.

3. **Utilization of DBE Vendor Listings:**

All bidders are required to utilize the most recent Sewerage and Water Board State-Local Disadvantaged Business Enterprise Program Approved Vendor Listings for **Construction, Goods & Services/Professional Services**, in their selection of DBE entities to meet DBE participation goals. **Bidders are required to utilize DBE's as subcontractors or suppliers only in the areas for which they are certified. A description of the areas of work that DBE's can provide is contained in these vendor listings.** In addition, an alphabetical list of vendors/contractors is provided indicating the name of the company, address, name of owner, telephone number, fax number, the date the company became certified, and a description of the work that these entities are certified to perform. **Companies that are already certified as a DBE cannot fulfill the DBE requirements by listing themselves as the subcontractor to meet the DBE goal. The prime contractor shall select another DBE from the Sewerage and Water Board's Approved Vendor Listing.**

4. **Contacting DBE's and Obtaining a Firm Price**

All prime contractors are required to contact DBE's and obtain a firm price before listing the DBE's on the Participation Summary Sheet.

5. **Failure to Comply with DBE Bid Specifications:**

All bidders for this Board contract are hereby notified that failure to comply with the above DBE specifications may constitute the bid as being non-responsive, and sufficient cause for rejection.

6. **Failure to Carry Out DBE Policy:**

All bidders, potential contractors, or subcontractors for this Board contract are hereby notified that failure to comply with the DBE policy and DBE obligations, set forth above, shall constitute a breach of contract which may result in termination of the contract or such other remedy as deemed appropriate by the Board, to include excluding bidder from bidding on future Board contracts.

7. **Setting Minimum Participation Goals:**

The stated minimum percentage DBE participation goal recommended by CRC and approved by the Board applies to the work of this contract. The two lowest numerical bidders must complete and submit a DBE Participation Summary Sheet no later than three (3) days after the bid opening (excluding Saturdays, Sundays and holidays). The DBE Participation Summary Sheet should be completed properly, showing that at least the percentage goal of the total contract bid price will be subcontracted or otherwise awarded through procurement action to DBE's. Should the bidder fail to comply with this request, the bid shall be considered unresponsive, unless:

a. An affidavit is furnished by the bidder with its bid showing that the DBE goals cannot be met for the following reasons:

- (1) No DBE firms made offers. Here, it must be shown, documented and demonstrated that good faith efforts (as defined in Part III, D, 2. of the Board's DBE plan) were made by the bidder to obtain the participation of DBE firms and that they did not respond, or
- (2) The DBE offers made and accepted for subcontract and/or material supplies do not total the stated goal for participation, but total a lesser percentage, and
- (3) The bidder was unable to obtain DBE further participation, despite his or her demonstrated

good faith efforts (as defined in Part III, D, 2 of the Board's DBE Plan) to obtain additional participation by DBE firms.

- b. Each of the assertions made by the bidder must be supported by documentary evidence.

8. Other Clauses Unaffected:

Nothing contained herein shall invalidate, change, annul, release, restrict, or affect the liability on the bonds or insurance given by the contractor, or the time required for completion of the contract.

9. Determination of Efforts to Meet Goals:

Initial determination of bidder efforts to meet the DBE participation goal shall be based on the DBE participation representations submitted by the two lowest numerical bidders no later than three (3) days after the bid opening (excluding Saturdays, Sundays and holidays). Bidders shall submit all the forms required herein no later than three (3) days after the bid opening (excluding Saturdays, Sundays and holidays), and the DBE Office will examine the contents thereof. The Board's DBE Officer may, if deemed advisable, request further information, explanation or justification from any bidder.

10. Contract Monitoring:

- a. The Board's DBE Office will monitor contractor during the operation of the contract to insure that the contractor meets all of its DBE obligations as specified in the contract bid. The Board's DBE office shall establish rules and regulations, to be approved by the Board, for the ongoing monitoring of contractor compliance.
- b. Disadvantaged Business Enterprise Program Office personnel or their designated representative shall be allowed to conduct periodic monitoring of contractors' compliance with the agreed to Disadvantaged Business Enterprise Program participation requirements. Contractors shall be required to complete and return to the Disadvantaged Business Enterprise Program Office in the time required all requests for information and data relative to the contractors' activities in meeting the required Disadvantaged Business Enterprise participation goal. Additionally, Disadvantaged Business Enterprise Office personnel or their designated

representative shall have access to contractor and subcontractor(s) records pertaining to, but not specifically limited to labor, costs and materials supplied and used on the Board contract, as well as inspection and photocopying of any and all contracts, agreements and correspondence relative to the Disadvantaged Business Enterprise contract participation requirements. Such inspection will be performed during normal business hours, and will be conducted in such a fashion so as to minimize interference with production of the contract. Visits may be made to job sites, as well as to administrative offices of the contractor and subcontractor(s) participants. Such inspection and on-site visits may be scheduled with or without prior notice to the contractor or Disadvantaged Business Enterprise subcontractor participant. Contractors' failure to comply with these monitoring requirements may result in termination of the contract or such other remedy as deemed appropriate by Board.

11. Maintaining Records:

Subsequent to the completion of a contract, contractors are required to maintain for three (3) years such records as are necessary to determine compliance with their DBE obligations. During construction, or performance of the DBE obligations, contractors shall submit reports as requested to enable the DBE Office to monitor this compliance.

12. Umbrella Bonding:

On contracts where subcontracting exists and where practicable (i.e., when a substantial risk or financial hardship would not be incurred by the prime contractor), the contractor may use an umbrella bond to encompass the DBE firm.

13. Board Action to Seek Compliance:

The contractor consents to such appropriate actions taken to ensure that prime contractors and subcontractors comply with the DBE provisions, to include but not limited to:

- a. desk audits to review all material, and information concerning the contractor's compliance;
- b. on-site reviews that may include interviews, visits to project locations, and inspection of documents and/or information not

available at the desk audit that pertains to the contractor's compliance;

- c. any additional investigation that may be called for by a lack of proper record keeping, failure of the prime contractor to cooperate; failure of DBEs to cooperate; visible evidence unsatisfactory performance; other evidence as may warrant further investigation.

14. Non-Compliance Finding:

The Board staff will make compliance determinations regarding its prime contractors. Documentation of noncompliance will include the specific areas in which the contractors failed to comply. In these instances, appropriate legal action consistent with the DBE and other contract provisions will be taken.

15. Contractor's Duties

a. Record Keeping

Successful bidders shall establish and maintain records and submit regular reports to the DBE office as required, which will identify and assess progress in achieving DBE subcontract goals and other DBE participation efforts.

b. Failure To Comply With EDBP Participation Requirements

Failure to comply with any of the EDBP requirements of this contract shall constitute a violation of the terms and conditions of this contract and a cause for the termination of the contract at the option of the Board.

Such violations shall include, but not limited to:

Failing to meet the percentage participation requirements as set out in the contract documents.

Failing to use certified EDBP contractors/vendors in performing the scope of work as identified in the contract documents (EDBP participation summary sheet).

Failing to comply with the "monitoring of EDBP requirements" included herein as part of the contract, such as contractors:

Failure to submit quarterly report and any other necessary reports timely and adequately as required by the EDBP Office.

Failure to grant access to contractor/subcontractor records by EDBP Office personnel, and

Failure to allow on-site investigations and visits, etc.

Failing to report the removal or termination of a certified EDBP vendor /subcontractor.

Failing to secure authorization for replacement of certified EDBP subcontractors from the Director of the Economically Disadvantaged Business Program.

In Lieu of termination the Board, through the EDBP Office, may impose the following penalties:

Withhold from the contractor in violation up to 10% of all future payments due to the contractor, until such time as the violations have been corrected.

Withhold from the contractor in violation, all future payments until such time as the violations have been corrected.

c. Subcontract Clause

All bidders and potential contractors must assure the Board that they will include the above clauses in all agreements, which offer further subcontracting opportunities.

d. Contract Award

Bidders are hereby advised that meeting DBE subcontract goals or making a demonstrated good faith efforts to meet such goals are conditions of being awarded and maintaining construction, procurement, or professional services contracts by the Board.

e. Restrictions on DBE Subcontracting

No **DBE** subcontractor or vendor selected to perform work as a **DBE** on a Sewerage and Water Board contract will be allowed to

subcontract any portion of its work to a Non-Board certified **DBE**, unless the work to be performed is necessary for the execution of the contract and there are no Board certified **DBE**'s available to perform such work.

This process will require that each **DBE** participant performing work on a Sewerage and Water Board funded contract submit a request to subcontract out any portion of work deemed necessary for execution of the contract to the Board's **EDBP** office. On a form provided by the **EDBP** office, the **DBE** contractor or vendor will indicate the dollar amount of work to be subcontracted, the specific scope or nature of the work, the percentage of the total amount of work to be performed by the **DBE** subcontractor and vendor, and the entity to whom the work will be subcontracted.

Both prime and **DBE** subcontractors are advised that the failure to comply with these requirements may result in the loss of **DBE** certification and non-compliance by the prime contractor in meeting **DBE** contractual obligations.

f. Changes In DBE Participation

The Prime Contractor will not be allowed to make changes in DBE participation without submittal of a written request explaining reason, a revised Participation Summary Sheet and approval by the Director of the Economically Disadvantaged Business Program. Failure to comply with these requirements may result in non-compliance by the Prime Contractor in meeting DBE contractual obligations.

16. POLICY TO ENHANCE THE USE OF DBE VENDORS

All vendors/contractors are encouraged to identify and use S&WB certified **DBE** vendors to the fullest extent possible in major as well as minor purchases of heavy equipment, hardware supplies, etc.

The Sewerage and Water Board has a long-standing commitment to fairness and equal opportunity in hiring and contracting. As such, the workforce of contractors/vendors is encouraged to be representative of a diverse population. Achievement of the full benefits of diversity will only come when an attitude of inclusion is adopted.

The Sewerage and Water Board believes that developing such a policy would be a positive step to increase the dollar value of contracts awarded to **DBE** vendors and subcontractors.

17. ACCESS TO APPROVED VENDOR LISTS

The current listings of Vendors approved by the Sewerage and Water Board are available for use by the bidders on the Sewerage and Water Board external Website, WWW.SWBNO.ORG.

ECONOMICALLY DISADVANTAGED BUSINESS PARTICIPATION SUMMARY SHEET

Minimum Percentage Goal Participation for this Contract is 36%

Katrina Related Repairs to Garage #2 at Central Yard, Contract No. 8129

Name and Address of Disadvantaged Business Enterprise Company	Name of Contact Person	S&WB SLDBE Vendor Listing/Directory Date, and Page Number	Scope of Work to be Performed	Dollar Amount of work to be performed	Percentage of Dollar Amount to Total Bid Price

THIS FORM MUST BE COMPLETED AND SUBMITTED BY THE TWO LOWEST NUMERICAL BIDDERS, ALONG WITH CORRESPONDENCE FROM SLDBE(S) ON THEIR OWN LETTERHEAD REAFFIRMING NEGOTIATED TERMS, NO LATER THAN 3 DAYS AFTER THE BID OPENING (EXCLUSIVE OF SATURDAYS, SUNDAYS AND HOLIDAYS). FAILURE TO DO SO WILL RENDER THE BID NON-RESPONSIVE. BY SUBMITTAL OF THIS FORM, PRIME CONTRACTOR ACKNOWLEDGES THAT DBE(S) HAVE BEEN CONTACTED AND A FIRM PRICE HAS BEEN OBTAINED.

NOTE: Signature required even if judged **NOT APPLICABLE** by the **BIDDER**

Prime Name: _____

Print Name

Prime Company's Name: _____

Prime Address: _____

Prime Signature: _____

Signature

Date: _____

E-mail: _____

Telephone Number: _____

**VOLUNTARY EXTENSIONS OF THE AWARD
FOR CONTRACT NO. 8129**

SECTION 5

If this bid is determined to be the lowest responsive and responsible bid, Bidder agrees to bid extension of the award date by up to two (2) thirty (30) day periods in accordance with the provisions of Louisiana Revised Statue. Title 38, Section 2215 (A).

AGREED:

NAME OF BIDDER (TYPE OR PRINT)

SIGNATURE OF BIDDER

COMPANY NAME

***** END OF SECTION *****

SECTION 6

PROPOSAL

6-01 LOUISIANA UNIFORM PUBLIC WORK BID FORM

TO: Sewerage and Water Board of New Orleans
Purchasing Department, Room 133
625 St. Joseph St
New Orleans, LA 70165

BID FOR: Contract 8129
Katrina Related Repairs to Garage #2 at Central Yard

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: Royal Engineers & Consultants, LLC and dated: 20 August 2014.

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

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:

Not Applicable _____ Dollars (\$ _____)

Alternate No. 2 (*Owner to provide description of alternate and state whether add or deduct*) for the lump sum of:

Not Applicable _____ Dollars (\$ _____)

Alternate No. 3 (*Owner to provide description of alternate and state whether add or deduct*) for the lump sum of:

Not Applicable _____ 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 if the contract includes unit prices. Otherwise it is not required and need not be included with the form. The number of unit prices that may be included is not limited and additional sheets may be included if needed.

** 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.

LOUISIANA UNIFORM PUBLIC WORK BID FORM

UNIT PRICE FORM

TO: Sewerage and Water Board of New Orleans
Purchasing Department, Rm 133
625 St. Joseph St
New Orleans, LA 70165

BID FOR: Contract 8129
Katrina Related Repairs to Garage 2
at Central Yard

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:		<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # ___ Mobilization, insurance and bonds complete in every detail and all-inclusive.			
M		QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB1	E	1	Lump sum		
DESCRIPTION:		<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Demolition of and disposal of interior spaces PDR FEMA Items 1-7, 26a, 37-40, 46, 46a, 51, 51a, 52e, AE65, AE81			
REF. NO.		QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB2	E	1	Lump Sum		
DESCRIPTION:		<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Demolish and replace exterior stucco. PDR FEMA Items 34, 34a			
REF. NO.		QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB3	E		Lump Sum		
DESCRIPTION:		<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Mold remediation and abatement including complete clean up and all testing. PDR FEMA Items 46b, 47, 47a-j, 52,, 52a-d, 52f-j, AE165-166, AE179-180			
REF. NO.		QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB4	E	1	Lump Sum		
DESCRIPTION:		<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Sand Blast and Paint metals below 8' in Garage. PDR FEMA Items 16, 16a-b, 30, 30a-b			
REF. NO.		QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB5	E	1	Lump Sum		
DESCRIPTION:		<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Repair and coat roof.			
REF. NO.		QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB6	I	1	Lump Sum		
DESCRIPTION:		<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Replace Fan Shroud on roof PDR FEMA Item AE237			
REF. NO.		QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB7	E	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Remove and repair/reset/replace swinging metal doors, complete including frames and hardware. PDR FEMA Items 12, 12a-f, AE41-44			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB8	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Remove, refinish, and re-install wooden doors, complete including new hardware. PDR FEMA Items 12g, 12h			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB9	1	Lump sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Remove and replace windows. PDR FEMA Items 13, 13a, AE53-54, AE56			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB10	350	SF		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Repair Overhead doors. PDR FEMA Items 28, 28a, 48f, AE59			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB11	240	SF		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Install new floors and cove base. Includes any required surface repairs. PDR FEMA Items 1a, 2a, 35, 35a, 36, 36a			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB12	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#__ Replace suspended ceilings PDR FEMA Item 3a, 37a			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB13	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Replace gypsum board walls, ceilings, and all insulation.. PDR FEMA Items 4a, 5a, 38a, 39a			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB14	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Remove, clean, disinfect and re-install toilets and sinks. Remove and replace toilet partitions and bathroom accessories. PDR FEMA Items 9, 10, 10a-d, 11, 11a			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB15	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. __ Remove and replace fire equipment cabinets and hose rack assemblies. PDR FEMA Items 14, 14a			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB16	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Remove and replace compressed air reels and hoses in Garage. PDR FEMA Items 15, 15a			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB17	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Remove and replace Loading Dock. PDR FEMA Items 29, 29a, 29b			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB18	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Remove and replace water coolers. PDR FEMA Items 8, 8a, 8b, AE184			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB19	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Remove and replace air compressors. PDR FEMA Items 27, 27a, 31, 31a			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB20	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Replace thru-wall gas line. PDR FEMA Item 33, 33a			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB21	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Replace HVAC System including new ductwork where indicated, registers, and grilles. PDR FEMA Item 42			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB22	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Clean and disinfect HVAC ducts to remove mold			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB23	1	Lump sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Replace downspouts. PDR FEMA Item 44			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB24	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Repair Chain Link Fence and Gate. PDR FEMA Items 48, 48a.			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB25	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Replace stair nosing.			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB26	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Replace Kitchen Cabinets and Counters			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB27	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Replace Gutters			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB28	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Finish walls per specification. PDR FEMA items 7c, 41a			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB29	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt. # __ Bead blast existing floor and provide new non-slip resinous floor in Oil Storage			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
BB30	1	Lump Sum		

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

6-2 ADDITIONAL REQUIREMENTS

All blank spaces in this Proposal section shall be filled. A bid price shall be indicated for each bid item. Bids received without all such items completed will be considered non-responsive. The bid shall contain an acknowledgement of receipt of all Addenda in space provided. The Louisiana Uniform Public Work Bid Form & Unit Price Form (if applicable) and the amount of Deposit or Bid Bond five percent (5%) of the total amount of the proposal is REQUIRED to be submitted in a sealed envelope on bid opening date. The two (2) lowest numerical bidders have three (3) days after the bid opening (exclusive of Saturdays, Sundays and Holidays) to submit any additional information such as (Voluntary Extension Sheet, Affidavit, Economically Disadvantage Business Summary Sheet if applicable) as well as requirements of Sections 6-03 through 6-7 below. Failure to do so will render the bid non-responsive.

6-3 BIDDER DECLARATION

_____ do hereby declare that _____ the only person _____ interested in this proposal and that no other person than the one _____ herein named have any interest herein or in the contract proposed to be taken; that it is made without any connection with any other person or persons making proposal for the same work and that it is in all respects fair and without collusion or fraud; also that no member of the Sewerage and Water Board or of the City Council of the City of New Orleans or any officer or employee of the City of New Orleans or of the several boards thereof, who are by law excluded from participation herein, and directly or indirectly interested herein or in furnishing bond or in any portion of the profits hereof.

_____ do hereby also declare that _____ have LOUISIANA CONTRACTOR'S LICENSE in the field of _____ with NUMBER _____.

And _____ do further declare that _____ have carefully examined the annexed specifications and the drawings furnished, and personally inspected the ground and that _____ will contract to provide the necessary tools, machinery and apparatus and other means of construction, and to furnish all labor and material specified in this contract or called for by the plans, necessary to complete the work in the manner specified and within the time mentioned in the specifications and according to the requirements of the Engineer, as herein set forth.

6-4 In accordance with Louisiana Revised Statute 38:2227 the following affidavit shown on the next page must be submitted with the bid, or no later than 3 days after the bid opening (excluding Saturdays, Sundays, and Holidays). Failure to do so will render the bid non-responsive. **Please note, THE AFFIDAVIT MUST BE NOTARIZED.**

6-5 GUARANTEES

_____ guarantee that the whole of the work under this contract will be fully completed within (200) calendar days after the date of the "Work Order" from the Engineer.

In case of delay in the completion of the contract beyond the contract time of completion as determined by the Board hereby agree to pay, as liquidated damages, the sum of Five Hundred Dollars (\$500.00) for each calendar day of such delay, which liquidated damages shall become due by the mere elapsing of the delay without the necessity of putting in default.

6-6 EMERGENCY PROCEDURES

Contractor must furnish telephone numbers for routine or emergency telephone calls.

NAME _____ TITLE _____

TELEPHONE NO.:
NORMAL CALLS _____

EMERGENCY _____

**STATE OF LOUISIANA
PARISH OF ORLEANS**

AFFIDAVIT

BEFORE ME, the undersigned authority, duly commissioned and qualified and sworn in and for the State and Parish aforesaid, personally came and appeared _____ who after being duly sworn, did depose and say as follows:

- 1) He/she is the _____ (title) of _____ (company);
- 2) He/she has not been convicted of, or has entered a plea of guilty or nolo contendere to any of the crimes, or equivalent federal crimes, listed in Louisiana Revised Statute 38:2227, specifically: public bribery, corrupt influencing, extortion, money laundering, theft, identity theft, theft of a business record, false accounting, issuing worthless checks, bank fraud, forgery, contractors misapplication of payments, malfeasance in office.
- 3) The contracting entity, person or corporation whose principal(s), member(s), and /or Officer(s) have, within the preceding 5 years, not been convicted or plead guilty to, a felony under state or federal statutes, for embezzlement, theft of public funds, bribery, falsification or destruction of public records; (City Code Section 2-8)
- 4) The following is a list of individual partners, incorporators, directors, managers, officers, organizers, or members who have a minimum ten percent interest ownership interest in the bidding entity:
 _____ (name) _____ (name)
 _____ (name) _____ (name)
 _____ (name) _____ (name)
- 5) No other persons hold an ownership interest in the bidding entity via a counter letter.
- 6) None of the above named individual partners, incorporators, directors, managers, officers, organizers, or members, who has a minimum ten percent interest ownership in the bidding entity, been convicted of, or has entered a plea of guilty or nolo contendere to any of the crimes, or equivalent federal crimes, listed in Louisiana Revised Statute 38:2227, specifically: public bribery, corrupt influencing, extortion, money laundering, theft, identity theft, theft of a business record, false accounting, issuing worthless checks, bank fraud, forgery, contractors misapplication of payments, malfeasance in office.
- 7) He/she is not delinquent on any taxes owed the City of New Orleans or fees/charges to the Sewerage and Water Board. (City Code Section 2-8)

The following sections apply only to Public Works Contracts:

- 8) In accord with LA Revised Statute 38:2212.10 the entity represented herein is registered and participates in the "Status verification system" of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, 8 U.S.C. 1324(a), known as the "E-Verify" program to verify that all employees in the State of Louisiana are legal citizens of the United States or are legal aliens.
- 9) The entity represented herein 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.
- 10) The entity represented herein shall require all subcontractors to submit to the contractor a sworn affidavit verifying compliance with the Status verification system.

WITNESSES:

AFFIANT

SWORN TO AND SUBSCRIBED BEFORE ME ON THIS

_____ **DAY OF** _____, 20_____.

NOTARY PUBLIC

Notary Id. No. or Bar Roll No.

PLEASE PRINT NAME OF NOTARY