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SECTION 00500 - SUBCONTRACT AGREEMENT FORMS

PART 1 - GENERAL

1.1 SUBCONTRACT AGREEMENT FORMS

A. Agreement between Contractor and Subcontractor, including attachments or exhibits attached thereto, where the basis of payment is a stipulated sum.

B. Reference copies of these forms are attached at the end of this section.

1. Tenant Finish Subcontract Form - TI-SC1
2. Tenant Finish Design/Build Subcontract Form – TI-SC2
3. Material Purchase Order – SC-4

END OF SECTION
Form TI-SC1

AGREEMENT BETWEEN
 DUKE AND SUBCONTRACTOR

PROJECT NO: 1~
CC: 2~

AGREEMENT made this 3~ day of 4~, 20___,

between "Duke": 5~_________________________________________________________

________________________________________________________

and the "Subcontractor": 6~________________________________________________

________________________________________________________

for the following "Project": 7~____________________________________________

________________________________________________________

the "Architect" 8~________________________________________________________

________________________________________________________

the "Tenant": 9~_________________________________________________________

________________________________________________________

Duke and the Subcontractor agree as set forth below:

FORM TI-SC1 (Revised 09/16/11)
ARTICLE I
SUBCONTRACT DOCUMENTS

1.1 Definitions. The "Subcontract Documents," except for Modifications issued subsequent to the date of this Agreement, consist of this Agreement and the following documents:

1.1.1 Duke’s Interior Finish Master Specifications dated _____ 10~

1.1.2 The Subcontract General Conditions attached hereto and made a part hereof as Exhibit A.

1.1.3 The Drawings and Specifications identified in Exhibit B and Exhibit B-1 (if applicable), attached hereto and made a part hereof.

1.1.4 The Project Schedule attached hereto and made a part hereof as Exhibit C.

1.1.5 The following Addenda: 11~

________________________________________________________________
________________________________________________________________

1.1.6 Other documents: 12~

________________________________________________________________
________________________________________________________________

1.2 Examination. The Subcontract Documents are available for examination by the Subcontractor at Duke’s office during regular business hours. By executing this Agreement, the Subcontractor represents that it has fully examined the Subcontract Documents and has executed this Agreement with full knowledge and understanding of the Subcontract Documents, including Duke’s Interior Finish Master Specifications referenced in Section 1.1.1.

1.3 Entire Agreement. The Subcontract Documents represent the entire and integrated agreement between Duke and the Subcontractor and supersede all prior negotiations, representations or agreements, whether written or verbal.

1.4 Priority of Documents. In the event of a conflict or inconsistency among or between the Subcontract Documents, the Subcontract Documents shall control and govern in the following order of priority:

1 This Agreement;

FORM TI-SC2 (Revised 09/16/11)
the Subcontract General Conditions;
the Addenda;
the Project Schedule;
other documents identified in Section 1.1.6 above;
the Drawings and Specifications identified in Exhibit B to this Agreement, or Exhibit B-1 (if applicable), and the Construction Documents approved in writing by Duke;
Duke’s Interior Finish Master Specifications identified in Section 1.1.1.

Duke’s Interior Finish Master Specifications represents the minimum standards for the Work. Duke’s Interior Finish Master Specifications shall be binding upon the Subcontractor except to the extent a term, condition or item is specifically changed or supplanted by another Subcontract Document.

1.5 State Changes. State-specific changes to this Agreement and the other Subcontract Documents are set forth in Attachment 1 to this Agreement. The state-specific changes modify, add to and delete from the language of this Agreement and the other Subcontract Documents. Where any language of this Agreement or the other Subcontract Documents conflicts or is inconsistent with the state-specific changes, the state-specific changes shall control.

ARTICLE 2
THE WORK

2.1 Generally. The Subcontractor shall perform the Work required by the Subcontract Documents for 13~ for the Project. The "Work" shall include all supervision, labor, materials, supplies, tools, equipment, machinery, transportation, taxes, and all other items and services necessary for the construction and completion of the Work, or reasonably inferable from the Subcontract Documents to accomplish the results indicated by the Subcontract Documents, including the following: 14~ The Work shall be performed in strict compliance with the Subcontract Documents, including the Project Specifications, Divisions 15~.

ARTICLE 3
SUBCONTRACT TIME

The Work shall be commenced and completed as provided in the Project Schedule (the "Subcontract Time"), subject to extensions of the Subcontract Time as set forth in the Subcontract General Conditions. "Substantial Completion" of the Project or designated portion thereof shall be the date determined by Duke when the Project is sufficiently complete in accordance with the Subcontract Documents so the Tenant can occupy or utilize the Project or designated portion thereof for the use indicated by the Subcontract Documents. The term "day" shall mean calendar day. Time is of the essence of this Agreement.
ARTICLE 4
PAYMENTS

4.1 **Subcontract Sum.** Duke shall pay the Subcontractor for the performance of the Work the total sum of: 16~

The Subcontract Sum has been determined as follows: 17~

<table>
<thead>
<tr>
<th>*Cost_Code_1+</th>
<th>*Cost_Code_1_Description+</th>
<th>*Cost_Code_1_Amount+</th>
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<td>*Cost_Code_10_Description+</td>
<td>*Cost_Code_10_Amount+</td>
</tr>
</tbody>
</table>

**OVERALL CONTRACT TOTAL:** *Overall_Contract_Sum+

4.2 **Progress Payments.** Based upon Applications for Payment submitted to Duke by the 25th day of the month, Duke shall make progress payments to the Subcontractor within seven (7) days of Duke’s receipt of payment from the Tenant. Applications for Payment received after the 25th day of the month shall not be considered submitted until the next month’s submission due date.

4.3 **Retainage.** Duke may retain from each progress payment a sum equal to ten percent (10%) of the progress payment authorized by Duke for payment to the Subcontractor. Duke shall have the option, but not the obligation, to reduce or waive the retainage requirements of this Agreement or release any portion of retainage prior to the date specified in the Contract Documents. Any exercise of this option, however, shall not be a waiver of (1) any of Duke’s rights to retainage in connection with other payments to the Subcontractor, or (2) any other right or remedy of Duke.
4.4 Changes. For any adjustments to the Subcontract Sum that are based on other than unit prices, the Subcontractor agrees to charge, and accept as payment for overhead and profit, the following percentages of costs attributable to the change in the Work:

.1  18~ percent (____ %) mark-up by the Subcontractor; and

.2 When both additions and credits are involved in a change, the allowance for overhead and profit shall be figured on the basis of the net increase or decrease.

4.5 Final Payment. Final Payment, constituting the entire unpaid and earned balance of the Subcontract Sum, shall be paid to the Subcontractor as provided in the Subcontract General Conditions.

"DUKE"

[INSERT THE FULL AND CORRECT LEGAL NAME OF THE DUKE ENTITY FOR THIS PROJECT]

By: ________________________________
    (Signature)
    19~ ________________________________
    (Printed Name and Title)

"SUBCONTRACTOR"

By: ________________________________
    (Signature)

    (Printed Name and Title)
AGREEMENT BETWEEN
DUKE AND SUBCONTRACTOR

PROJECT NO: 1
CC: 2

AGREEMENT made this 3 day of 4, 20__,

between "Duke":

and the "Subcontractor":

for the following "Project":

the "Architect"

the "Tenant":

Duke and the Subcontractor agree as set forth below:

FORM TI-SC2 (Revised 09/16/11)
ARTICLE I
SUBCONTRACT DOCUMENTS

1.1 Definitions. The "Subcontract Documents," except for Modifications issued subsequent to the date of this Agreement, consist of this Agreement and the following documents:

1.1.1 Duke’s Interior Finish Master Specifications dated _______ 10~______

1.1.2 The Subcontract General Conditions attached hereto and made a part hereof as Exhibit A.

1.1.3 The Drawings and Specifications identified in Exhibit B and Exhibit B-1 (if applicable), attached hereto and made a part hereof.

1.1.4 The Project Schedule attached hereto and made a part hereof as Exhibit C.

1.1.5 The following Addenda: 11~_____________________________

_________________________________________________________________________

1.1.6 Other documents: __12~____________________________

_________________________________________________________________________

1.2 Examination. The Subcontract Documents are available for examination by the Subcontractor at Duke’s office during regular business hours. By executing this Agreement, the Subcontractor represents that it has fully examined the Subcontract Documents and has executed this Agreement with full knowledge and understanding of the Subcontract Documents, including Duke’s Interior Finish Master Specifications referenced in Section 1.1.1.

1.3 Entire Agreement. The Subcontract Documents represent the entire and integrated agreement between Duke and the Subcontractor and supersede all prior negotiations, representations or agreements, whether written or verbal.

1.4 Priority of Documents. In the event of a conflict or inconsistency among or between the Subcontract Documents, the Subcontract Documents shall control and govern in the following order of priority:

.1 This Agreement;
.2 the Subcontract General Conditions;
.3 the Addenda;
.4 the Project Schedule;
other documents identified in Section 1.1.6 above;
the Drawings and Specifications identified in Exhibit B to this Agreement, or Exhibit B-1 (if applicable), and the Construction Documents approved in writing by Duke;
Duke’s Interior Finish Master Specifications identified in Section 1.1.1.

Duke’s Interior Finish Master Specifications represents the minimum standards for the Work, including the minimum design standards for design services included in the Subcontractor’s scope of the Work. Duke’s Interior Finish Master Specifications shall be binding upon the Subcontractor except to the extent a term, condition or item is specifically changed or supplanted by another Subcontract Document.

1.5 State Changes. State-specific changes to this Agreement and the other Subcontract Documents are set forth in Attachment 1 to this Agreement. The state-specific changes modify, add to and delete from the language of this Agreement and the other Subcontract Documents. Where any language of this Agreement or the other Subcontract Documents conflicts or is inconsistent with the state-specific changes, the state-specific changes shall control.

ARTICLE 2
THE WORK

2.1 Generally. The Subcontractor shall perform the Work required by the Subcontract Documents for the Project. The "Work" shall include all supervision, labor, materials, supplies, tools, equipment, machinery, transportation, taxes, and all other items and services necessary for the construction and completion of the Work, or reasonably inferable from the Subcontract Documents to accomplish the results indicated by the Subcontract Documents, including the following:

ARTICLE 3
SUBCONTRACT TIME

The Work shall be commenced and completed as provided in the Project Schedule (the "Subcontract Time"), subject to extensions of the Subcontract Time as set forth in the Subcontract General Conditions. "Substantial Completion" of the Project or designated portion thereof shall be the date determined by Duke when the Project is sufficiently complete in accordance with the Subcontract Documents so the Tenant can occupy or utilize the Project or designated portion thereof for the use indicated by the Subcontract Documents. The term "day" shall mean calendar day. Time is of the essence of this Agreement.
ARTICLE 4
PAYMENTS

4.1 Subcontract Sum. Duke shall pay the Subcontractor for the performance of the Work the total sum of: 17~

The Subcontract Sum has been determined as follows: 18~

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<tr>
<th>*Cost_Code_1+</th>
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<td>*Cost_Code_10_Amount+</td>
</tr>
</tbody>
</table>

OVERALL CONTRACT TOTAL: *Overall_Contract_Sum+

4.2 Progress Payments. Based upon Applications for Payment submitted to Duke by the 25th day of the month, Duke shall make progress payments to the Subcontractor within seven (7) days of Duke’s receipt of payment from the Tenant. Applications for Payment received after the 25th day of the month shall not be considered submitted until the next month’s submission due date.

4.3 Retainage. Duke may retain from each progress payment a sum equal to ten percent (10%) of the progress payment authorized by Duke for payment to the Subcontractor. Duke shall have the option, but not the obligation, to reduce or waive the retainage requirements of this Agreement or release any portion of retainage prior to the date specified in the Contract Documents. Any exercise of this option, however, shall not be a waiver of (1) any of Duke’s rights to retainage in connection with other payments to the Subcontractor, or (2) any other right or remedy of Duke.

4.4 Changes. For any adjustments to the Subcontract Sum that are based on other than unit prices, the Subcontractor agrees to charge, and accept as payment for
overhead and profit, the following percentages of costs attributable to the change in the Work:

.1 19~ percent (___ %) mark-up by the Subcontractor; and

.2 When both additions and credits are involved in a change, the allowance for overhead and profit shall be figured on the basis of the net increase or decrease.

4.5 Final Payment. Final Payment, constituting the entire unpaid and earned balance of the Subcontract Sum, shall be paid to the Subcontractor as provided in the Subcontract General Conditions.

"DUKE"

[INSERT THE FULL AND CORRECT LEGAL NAME OF THE DUKE ENTITY FOR THIS PROJECT]

By: ______________________________
    (Signature)

20~ ______________________________
    (Printed Name and Title)

"SUBCONTRACTOR"

By: ______________________________
    (Signature)

______________________________
    (Printed Name and Title)
Form SC-4

PURCHASE ORDER

__________________________

[INSERT THE FULL AND CORRECT
LEGAL NAME OF THE DUKE ENTITY
FOR THIS PROJECT]

TO:

________________________________________

8~__________________ (telephone)
9~__________________ (facsimile)

PURCHASE ORDER DATE: 10~__________  (Carrier must call Duke’s office 24 hours prior to
delivery)

DELIVERY DATE: 5~

SUBMITTALS
DUE DATE: 6~

Seller agrees to deliver to Duke at the above Project the following “Goods”:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>COST CODE</th>
<th>DESCRIPTION</th>
<th>AMOUNT</th>
</tr>
</thead>
</table>

The Goods and Seller's obligations to Duke shall conform strictly to this Purchase Order and its Terms
and Conditions, the Project Documents identified in Exhibit A to this Purchase Order, the Project
Schedule attached as Exhibit B to this Purchase Order, and the other documents identified in or attached
as Exhibit C to this Purchase Order (collectively, this "Purchase Order").

PAYMENT: Based upon invoices received by Duke by the 25th of the month, Duke shall make payment
to Seller within seven (7) days of Duke’s receipt of payment by the Owner. Invoices paid within 12~
days of Duke’s receipt of Seller’s invoice shall receive a discount of 13~ %.

INVOICE INSTRUCTIONS: An original and one copy of all invoices shall be submitted to Duke at the
above address. The Project Number, Mail Stop Number (17~_______) and Purchase Order Date
shall be shown on all invoices and on the outside of all shipping containers. DUKE SHALL NOT BE
REQUIRED TO PAY AN INVOICE UNLESS ACCOMPANIED BY DELIVERY TICKETS SIGNED BY
DUKE’S PROJECT SUPERINTENDENT OR OTHER AUTHORIZED DUKE PERSONNEL.
THIS PURCHASE ORDER IS EXPRESSLY SUBJECT TO THE "TERMS AND CONDITIONS" ATTACHED TO THIS PURCHASE ORDER.

[INSERT THE FULL AND CORRECT LEGAL NAME OF THE DUKE ENTITY FOR THIS PROJECT]
Signed: ______________________________
Printed: ______________________________  
Title: ________________________________

2 Originals to Seller

[INSERT THE FULL AND CORRECT LEGAL NAME OF THE SELLER FOR THIS PROJECT]
Signed: ______________________________
Printed: ______________________________ 
Title: ________________________________

Return 1 Original to Duke
**TERMS AND CONDITIONS**

1. **Acceptance.** The terms and conditions of this Purchase Order constitute an offer by Duke and may only be accepted on the exact terms hereof. Documents received from Seller which contain terms additional to or different from those set forth in this Purchase Order shall not be binding upon Duke or the Project owner. Shipment of Goods shall constitute acceptance by Seller of the terms and conditions of this Purchase Order.

2. **Delivery Date.** Time is of the essence. The timing of all deliveries shall conform to Duke's schedule, consistent with the Delivery Date. Duke shall have the right to modify the schedule. Should Seller's delivery of the Goods be delayed by Duke, the Delivery Date shall be extended. The Delivery Date shall not be extended due to weather conditions, the failure of Seller to place orders sufficiently in advance to assure timely delivery, or the failure of Seller to tender its Submittals to Duke by the "Submittals Delivery Date" stated on this Purchase Order. A request for an extension of the Delivery Date shall be made in writing to Duke no later than 10 days after the commencement of the occurrence giving rise to the delay; otherwise, it shall be waived. Seller shall provide Duke with an estimate of the probable effect of such occurrence on the Delivery Date. If the Project is delayed by Seller, Seller shall compensate Duke for, and indemnify Duke against, all damages, losses and expenses, including attorney's fees.

3. **Technical Assistance.** Seller is a merchant which deals in goods of the kind provided herein and holds itself out as having knowledge or skill peculiar to the Goods. Seller shall provide technical assistance to Duke with respect to any questions, requested interpretations or problems concerning the Goods.

4. **Fees and Royalties.** Seller shall secure and pay for all permits and governmental fees, licenses and inspections necessary for the delivery of the Goods. Seller shall comply with, and assume financial responsibility for, all applicable federal, state and local tax laws. Seller shall pay all royalties and license fees relating to the Goods, defend all suits or claims for infringement of patent rights brought against Duke relating to the Goods, and compensate Duke for, and indemnify Duke against, all related losses, costs and expenses, including attorney's fees.

5. **Submittals.** All shop drawings, product data and samples required by this Purchase Order ("Submittals") shall be prepared, reviewed, and approved by Seller and submitted to Duke no later than the "Submittals Delivery Date" stated on this Purchase Order. By such submission, Seller represents that it has verified all related materials, field measurements and field construction criteria for conformity with the requirements of this Purchase Order. Submittals must be approved in writing by Duke. Seller shall not be relieved of responsibility for any deviation from the requirements of this Purchase Order by the approval of Submittals.

6. **Site Access.** During deliveries, Seller shall keep roads, walks, ramps, and other areas on and adjacent to the Project site free from obstructions which might present a hazard to or interfere with traffic or the public. Seller shall provide adequate barricades, signs and other devices for traffic guides and public safety. When deliveries necessitate the closing of traffic lanes, Seller shall be responsible for arranging such closing in advance with authorities having jurisdiction over the lanes. Seller shall confine deliveries to areas permitted by law, ordinances, permits and this Purchase Order.

7. **Warranty.** Seller warrants to Duke and the Project owner that the Goods shall be of good quality and new unless otherwise required by this Purchase Order, shall be free from defects, conform to the requirements of this Purchase Order and any description of the Goods made, or sample or model provided, by Seller, and conform to all affirmative representations regarding the properties, characteristics or performance capabilities of the Goods made by Seller in published specifications, sales catalogues and other promotional materials. If Seller recommends the use of a particular installation method relating to the Goods, Seller warrants that, if followed, the method will produce a satisfactory result. All warranties provided by Seller hereunder are also provided to, and may be enforced by, the Project owner, its successors and assigns. The foregoing warranty is in addition to other warranties or claims, implied or express, permitted by applicable law. No disclaimer of warranties or limitation of liabilities or remedies language contained in any document provided by or from Seller shall be applied to vary the terms of this Purchase Order. Seller shall indemnify Duke against, and compensate Duke for, all claims, damages and expenses, including attorney's fees, incurred or sustained by Duke as a result of Seller's failure to abide by its warranty obligations.

8. **Payment Rights.** As a condition precedent to payment, Seller shall furnish all operational/Instructional/Maintenance Manuals and other product maintenance information for the Goods, warranties, and all other close-out documents required by this Purchase Order and, if requested by Duke, a general release of all liens and claims and lien waivers on forms provided by Duke. Duke may withhold payment from Seller to such extent as may be necessary, in Duke's opinion, to protect Duke from loss, including attorneys' fees and damages, because of defective Goods; liens or claims filed; damage to the Project owner, Duke, another subcontractor or a separate contractor; or evidence that the Goods will not be delivered by the Delivery Date or the Submittals will not be tendered to Duke by
the Submittals Delivery Date. If any payment claim or lien is made or filed with or against Duke or the Project, Seller shall immediately satisfy, discharge or bond-off the claim or lien, cause the Project owner and Duke to be dismissed from any action brought in connection with the claim or lien, and compensate Duke and the Project owner for, and indemnify them against, all losses, damages, and expenses, including attorney's fees, sustained or incurred by them.

9. Insurance. Seller shall maintain the following insurance: Worker's Compensation (required); Employer's Liability covering all employees, volunteers, temporary employees and leased workers ($1,000,000 each accident, $1,000,000 disease each employee, and $1,000,000 disease policy limits); Commercial General Liability (form CG 00 01 or its equivalent), for bodily injury and property damage, including personal injury, premises/operations, broad form property damage, independent contractors, products and completed operations (with limits of $3,000,000 and coverage for a minimum period of two (2) years after the Delivery Date and deletion of exclusions pertaining to contractual liability coverage ($3,000,000 per occurrence combined single limit for bodily injury and property damage); Commercial Automobile Liability, including owned, non-owned and hired car coverages ($1,000,000 per occurrence combined single limit for bodily injury and property damage). The insurance shall be procured from companies licensed to do business in the state in which the Project is located. The insurers must have a minimum AM Best rating of AVIII. All insurance procured or maintained by Seller shall be primary. Any insurance maintained by Duke or the Project owner shall be considered excess and non-contributory. Seller waives all rights against Duke, the Project owner and separate contractors for damages covered by Seller’s insurance. Certificates of Insurance acceptable to Duke shall be submitted to Duke prior to delivery and thereafter upon renewal or replacement of each required policy of insurance. The Certificates shall contain a provision that coverage shall not be canceled until at least thirty (30) days' prior written notice has been given to Duke. The Certificates for the commercial general liability and automobile liability policies shall name Duke, the Project owner and the Project owner’s lenders as additional insureds, and as additional insureds for claims caused in whole or in part by Seller’s negligent acts or omissions during Seller’s completed operations. The additional insured endorsement shall state that coverage is afforded the additional insureds as primary and non-contributory. Seller agrees to waive any and all rights of subrogation against the additional insureds. Duke shall withhold all payments to Seller until such Certificates of Insurance are received by Duke.

10. Claims. Seller shall make all claims in strict compliance with the procedures provided below. If Seller claims it is entitled to additional sums or time, for any reason whatsoever, it must notify Duke and request the issuance of a Change Order. No additional sums shall be paid to Seller, and no additional time shall be granted or recognized, unless Seller has received a written Change Order signed by Duke. If Duke asserts or defends a claim against the Project owner which relates to the Goods, Seller shall make available to Duke all requested documentation and information relating to that portion of the claim and Seller shall be bound by the outcome of the dispute resolution procedure between the Project owner and Duke. Seller shall reimburse Duke for all costs and expenses, including attorney's fees, incurred by Duke in defending a claim by, or prosecuting a claim against, the Project owner or any other party if such claim relates to or arises from the Goods. Duke shall pay Seller a proportionate share of any recovery received from the Project owner on the basis of the ratio of the Seller's claim to other claims that are asserted, less Duke's costs, expenses and attorney's fees. Likewise, Seller shall indemnify Duke against, and reimburse Duke for, a proportionate share of any recovery by the Project owner involving the Goods, plus Duke's costs, expenses and attorney's fees. Seller shall fully perform under this Purchase Order, if directed by Duke, in the event of a dispute; the existence of a dispute shall not justify delay or suspension of delivery by Seller.

11. Termination. If Seller fails in any material respect to comply with any provision of this Purchase Order, makes a general assignment for the benefit of creditors, has a receiver appointed, becomes insolvent or files for protection under the Bankruptcy Code (collectively, “Default”), Duke may, after forty-eight (48) hours written notice to Seller: (1) take such steps to correct, cure or overcome the Default as Duke deems expedient, and charge all expenses, losses, costs and damages, including attorney's fees, to Seller, or (2) terminate this Purchase Order and purchase the Goods for such amounts and under such terms as Duke deems expedient. If the unpaid balance of this Purchase Order exceeds the expense of purchasing the Goods from another vendor plus other losses, costs and damages incurred by Duke, such excess shall be paid to Seller. If such expense and other losses, costs and damages exceed the unpaid balance of this Purchase Order, Seller shall pay the difference to Duke. Duke may, at any time, terminate this Purchase Order for its convenience, in which event Seller shall receive, as full compensation, its actual, necessary, and reasonable costs relating to the Goods as of the date of termination.

12. Rejection of Goods. If the Goods fail to conform to the requirements of this Purchase Order, Duke may reject the Goods, accept any commercial unit or units and reject the rest, or revoke its prior acceptance of all or any commercial unit or units of the Goods irrespective of the value of such non-conformance. Duke's rights of rejection and revocation of acceptance shall not be waived or impaired by Duke's exercise of ownership rights over the Goods at any time. Seller shall replace all Goods rejected by Duke as defective or as failing to conform to this Purchase Order. If Seller fails to do so promptly upon receipt of written notice from Duke, Duke may make good the deficiencies and the cost shall be charged to Seller.
13. Integration. This Purchase Order represents the entire and integrated agreement between Duke and Seller, supersedes all prior negotiations, representations and agreements, whether written or oral, and shall not be modified, supplemented or interpreted by evidence of course of dealing, course of performance or usage of trade.

14. Assignment. In the event of termination of Duke's contract with the Project owner, Duke may assign this Purchase Order to the Project owner, subject to the provisions of Duke's contract with the Project owner and to the prior rights of sureties, if any. In such event, the Project owner shall assume Duke's rights and obligations under this Purchase Order without recourse to Duke.

15. Miscellaneous. Seller shall be responsible for its employees, distributors, equipment lessors, agents and representatives. This Purchase Order shall be governed by the laws of the state where the Project is located.

16. OFAC Compliance. The Office of Foreign Assets Control (OFAC) prohibits US persons from entering into transactions with individuals, groups, and entities, such as terrorists, narcotics traffickers and those engaged in activities related to the proliferation of weapons of mass destruction, collectively referred to as Specially Designated Nationals ("SDN"). Seller warrants and represents that neither it nor any individual in a management position with the Seller is named on the SDN list. If the name of Seller or any individual in a management position with Seller is discovered on the SDN list, published by OFAC, such discovery shall constitute a material breach of this Purchase Order. Duke shall promptly notify Seller, which shall have three (3) days in which to provide Duke clear and convincing evidence that (a) neither Seller nor any individual in a management position with Seller is an SDN, (b) the transaction is authorized by OFAC, or (c) a statutory exemption exists that permits Duke to do business with Seller. Should Seller fail to do so, then Duke shall terminate this Agreement for cause without further notice or grace period.
PART 1 – GENERAL

1.1 SUBCONTRACT GENERAL CONDITIONS

   A. Subcontract General Conditions following.

       1. Tenant Finish Subcontract Form - TI-SC1
       2. Tenant Finish Design/Build Subcontract Form – TI-SC2
EXHIBIT A
SUBCONTRACT GENERAL CONDITIONS TI-SC1

ARTICLE 1
SUBCONTRACT DOCUMENTS

1.1 Subcontractor Investigation. The Subcontractor represents that it has investigated the nature, locality, and site of the Project and the conditions and difficulties under which the Work is to be performed, and enters into this Agreement on the basis of its own investigation and evaluation and not in reliance upon any opinions or representations of Duke, the Tenant, or the Architect.

1.2 Intent of the Subcontract Documents. The intent of the Subcontract Documents is to include all items necessary for the proper execution and completion of the Work, including all incidental work necessary for the completion of the Work even though not specifically described in the Subcontract Documents. The Subcontract Documents are complementary; what is required by one shall be as binding as if required by all. The organization and arrangement of the Subcontract Documents shall not control Duke in dividing the work among the subcontractors or in establishing the extent of work to be performed by a Subcontractor. The terms “knowledge,” “recognize,” and “discover,” and their respective derivatives, when used in reference to the Subcontractor, shall be interpreted to mean that which the Subcontractor knows (or should know), recognizes (or should recognize), and discovers (or should discover) in exercising reasonable care and skill.

1.3 Inconsistencies or Conflicts. The Subcontractor shall promptly call to the attention of Duke any discrepancy or conflict in the Subcontract Documents which affects the Work. In the event of a conflict or discrepancy in the Subcontract Documents, Duke shall determine which takes precedence. This Agreement shall take precedence over the other Subcontract Documents, figure dimensions shall take precedence over scale measurements, large scale details shall take precedence over small scale drawings, and drawings of a later date shall take precedence over those of an earlier date.

1.4 Applicable Law. This Agreement shall be governed by the laws of the state where the Project is located, except that the Federal Arbitration Act shall govern the arbitration provisions of this Agreement. The Subcontractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Subcontract Documents shall confer no benefit, right, or remedy upon the Subcontractor to make claims or demands against the Tenant.

1.5 Minority, Women and Disadvantaged Business Enterprises. The Subcontractor expressly acknowledges that it is a condition of this Agreement that it make good faith best efforts to utilize minority business enterprises (MBEs), woman business enterprises (WBEs), and disadvantaged business enterprises (DBEs) for the Project, including such efforts to award or cause to be awarded subcontracts and purchase orders therefore. The Subcontractor shall provide a list, if expressly identified as part of the Work, of all of its MBE, WBE and DBE subcontractors and vendors detailing the scope of work and the dollar amount of each. The Subcontractor agrees that Duke shall have access to the personnel of the Subcontractor (and its sub-subcontractors and vendors) and documents in order to monitor, review and ensure compliance with this Section.

ARTICLE 2
CONSTRUCTION

2.1 Coordination and Supervision. The Subcontractor shall coordinate, supervise and direct the Work and shall cooperate with Duke in scheduling and performing the Work to avoid conflict, delay or interference with the work of Duke, other subcontractors and the Tenant’s own forces and separate contractors. The Subcontractor shall be responsible for all construction means, methods, techniques, sequences and procedures. The Subcontractor shall notify Duke in writing of any deficiencies in any other work prior to the commencement of the Work. Any unreported deficiencies shall be deemed accepted by the Subcontractor and shall become the responsibility of the Subcontractor.

2.2 Superintendent. The Subcontractor, as soon as practicable after the execution of this Agreement, shall furnish in writing to Duke the name and qualifications of a proposed superintendent, foreman, or other site supervisor. Duke may reply within 14 days to the Subcontractor in writing stating (1) whether Duke has reasonable objection to the proposed superintendent, foreman, or other site supervisor (2) that Duke requires additional time to review. Failure of Duke to reply within the 14 day period shall constitute notice of no reasonable objection. The Subcontractor shall not employ a proposed superintendent, foreman, or other site supervisor, to whom Duke has
made reasonable and timely objection. The Subcontractor shall not change the superintendent, foreman, or other site supervisor, without Duke’s consent, which shall not unreasonably be withheld or delayed.

2.3 Employees. The Subcontractor shall be responsible for its employees, laborers, material suppliers, equipment lessors, agents and representatives. The Subcontractor shall remove from the Project any person or entity under the Subcontractor’s control which Duke considers unsatisfactory. The Subcontractor shall assure harmonious labor relations to prevent delay, disruption or interference to the Project, and shall prevent strikes, slowdowns, work interruptions, jurisdictional disputes and other labor disputes relating to the Work.

2.4 Representative. The Subcontractor shall designate a single representative assigned to the Project who shall be responsible for attending all weekly and other meetings, monitoring schedules and coordinating all activities. The Subcontractor’s representative shall have the authority to commit and bind the Subcontractor.

2.5 Meetings and Reports. The Subcontractor shall communicate with the Tenant and the Architect only through Duke. The Subcontractor shall furnish to Duke periodic progress reports on the Work in such form as requested by Duke, including information on the status of materials and equipment which may be in the course of preparation, manufacture or transit. Regularly scheduled progress meetings shall be held weekly, unless otherwise directed, and the Subcontractor’s attendance is mandatory.

2.6 Permits, Fees and Notices. The Subcontractor shall secure and pay for all permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work. The Subcontractor shall comply with all laws, ordinances, rules, regulations and orders in effect in the state and locale of the Project and of any public authority having jurisdiction over the Work. If the Subcontractor performs any Work which the Subcontractor knows, or should know, is contrary to such laws, ordinances, rules, regulations, or orders, the Subcontractor shall assume full responsibility and bear all costs attributable thereto. The Subcontractor shall comply with, and assume financial responsibility for, all applicable federal, state and local tax laws, social security acts, unemployment compensation acts and workers’ compensation acts. Except as otherwise provided by the Subcontract Documents, the Subcontractor shall pay all royalties and license fees relating to the Work. The Subcontractor shall defend all suits or claims for infringement of patent rights that may be brought against Duke, the Tenant or the Architect relating to the Work, and shall be liable for all related losses, costs and expenses, including attorney’s fees.

2.7 Submittals. The Subcontractor shall timely prepare, review, approve and submit to Duke all shop drawings, product data and samples required by the Subcontract Documents (“Submittals”). The Subcontractor shall cooperate with Duke in the coordination of the Submittals with those of other subcontractors. By submitting Submittals, the Subcontractor represents that it has verified all related materials, field measurements and field construction criteria for conformity with the requirements of the Subcontract Documents. The Subcontractor shall not be relieved of responsibility for any deviation from the Subcontract Documents by the approval of Submittals.

2.8 Submittal Schedule. The Subcontractor shall prepare a submittal schedule, promptly after the execution of this Agreement and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for Duke’s approval. Duke’s approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Subcontractor’s construction schedule, and (2) allow Duke and the Architect reasonable time to review submittals. If the Subcontractor fails to submit a submittal schedule, the Subcontractor shall not be entitled to any increase in Subcontract Sum or extension of Subcontract Time based on the time required for review of submittals.

2.9 Site Access. The Subcontractor is responsible for its Project site access, subject to Duke’s general coordination. The Subcontractor shall keep roads, walks, ramps, and other areas on and adjacent to the Project site in good working order and condition and free from obstructions which might present a hazard to or interfere with traffic or the public, and shall provide adequate barricades, signs and other devices for traffic guides and public safety. When construction operations necessitate the closing of traffic lanes, the Subcontractor shall be responsible for arranging such closing in advance with authorities having jurisdiction over the lanes. The Subcontractor shall confine operations at the Project site to areas permitted by law, ordinances, permits and the Subcontract Documents.

2.10 Cutting and Patching. The Subcontractor shall leave all openings and effect all cutting, fitting or patching of its Work required to make its several parts fit together properly or to receive or be received by the work of other subcontractors. All cutting of structural members shall be performed by the subcontractor responsible for the involved structural work, subject to the review and approval of Duke and the structural engineer. The Subcontractor shall not cut or otherwise alter the work of the Tenant or any separate contractor without the written consent of Duke.
2.11 Cleaning Up. The Subcontractor shall at all times keep the Project free from the accumulation of waste materials caused by the Subcontractor’s operations. Upon completion of the Work, the Subcontractor shall remove all waste materials and the Subcontractor’s tools, equipment, machinery and surplus materials. If the Subcontractor fails to clean up, Duke may do so and the cost shall be charged to the Subcontractor. In the event of a dispute between subcontractors as to the responsibility for clean up, Duke may perform the clean up and allocate the cost among the subcontractors. Duke’s allocation of cost shall be binding on the Subcontractor.

2.12 Temporary Facilities. The Subcontractor shall provide, maintain, and remove all temporary offices, structures, sheds and storage facilities and all related utilities, gas, telephone, and water. Storage areas for the use of the Subcontractor shall be designated by Duke. No materials or equipment shall be stored except in areas approved by Duke.

2.13 Uncovering of Work. If any portion of the Work is covered contrary to the request of the Architect or Duke or the requirements of the Subcontract Documents, it shall be uncovered for observation and replaced at the Subcontractor’s expense. If any portion of the Work has been covered which the Architect or Duke has not specifically requested to observe before it was covered, either may direct the Work to be uncovered by the Subcontractor. If the uncovered Work is in accordance with the Subcontract Documents, the cost of uncovering and replacement shall, by Change Order, be reimbursed to the Subcontractor. If such Work is not in accordance with the Subcontract Documents, the cost shall be borne by the Subcontractor.

2.14 Correction of Work. The Subcontractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of Duke or separate contractors caused by the Subcontractor’s correction or removal of Work which is not in accordance with the requirements of the Subcontract Documents. If such testing, inspections or approvals reveal failure of the portions of the Work to comply with requirements established by the Subcontract Documents, all costs made necessary by such failure, including those of repeated procedures, shall be at the Subcontractor’s expense. If the Subcontractor fails to correct defective or non-conforming Work within two (2) days after receipt of written notice from Duke, Duke may make good the deficiencies and the cost shall be charged to the Subcontractor. If payments due the Subcontractor are not sufficient to cover the cost, the Subcontractor shall pay the difference to Duke.

2.15 Warranty. The Work shall be executed in accordance with the Subcontract Documents and in a workmanlike manner. In addition to the Subcontractor’s obligations to correct defective or non-conforming Work provided by law or as set forth in the Subcontract Documents, the Subcontractor warrants to the Tenant and Duke that materials and equipment furnished by the Subcontractor shall be of good quality and new unless otherwise required or permitted by the Subcontract Documents, the Work will be free from defects and will conform to the requirements of the Subcontract Documents, and the Work will comply with all applicable laws, building codes, rules and regulations. Substitutions not properly approved and authorized shall be considered non-conforming. If, within one year after the date of Substantial Completion of the Work, or by the terms of an special warranty required by the Subcontract Documents, any of the Work is found to be defective or non-conforming with the requirements of the Subcontract Documents, the Subcontractor shall correct it promptly after receipt of a written notice from Duke unless Duke has previously given the Subcontractor a written acceptance of such condition. The Subcontractor’s warranty excludes defects or damages caused by normal wear and tear during normal usage, use for a purpose for which the Project was not intended, improper or insufficient maintenance and abuse. The foregoing warranty is in addition to all special or extended warranties required by the Subcontract Documents or otherwise received from the Subcontractor or any material supplier or manufacturer.

2.15.1 The one year period for correction of defective or non-conforming Work does not constitute a limitation period with respect to the enforcement of the Subcontractor’s other obligations under the Subcontract Documents and the foregoing warranty shall not affect, limit or impair the Subcontractor’s responsibility for defects in the Work which do not appear within the applicable warranty period. The Subcontractor shall immediately correct and cure, at the Subcontractor’s expense, any defects which are reported to the Subcontractor.

2.15.2 The Subcontractor shall indemnify Duke against all claims, damages and expenses, including attorney’s fees, incurred by Duke as a result of the Subcontractor’s failure to abide by its warranty obligations.

2.15.3 Neither the acceptance of the Work nor any payment shall constitute a waiver of any claims against the Subcontractor for defective or nonconforming Work, whether latent or apparent, or otherwise act to release or discharge the Subcontractor from liability.
2.15.4 As a condition precedent to Final Payment, the Subcontractor shall furnish Duke, in form acceptable to Duke, all warranties, operating manuals, and a complete set of record drawings with all field changes noted and, if requested by Duke, a signed affidavit verifying that the Work has been completed in accordance with the Subcontract Documents.

2.16 Indemnification. To the fullest extent permitted by law, the Subcontractor shall defend and indemnify the Tenant, Duke and the Architect, their agents and employees, from and against all claims, damages, and expenses, including but not limited to attorney's fees, arising out of or resulting from the performance of the Work, but only to the extent caused by the failure to abide by this Agreement or by the negligent acts or omissions of the Subcontractor, its laborers, employees, subcontractors, suppliers and anyone for whose acts they may be liable. The indemnification obligation under this Section shall not be limited by the amount or type of damages, compensation or benefits payable by or for the Subcontractor under workers’ compensation acts, disability benefit acts or other employee benefit acts.

2.17 Bonds. If required by Duke and included in the Subcontract Sum, the Subcontractor shall furnish a performance bond and labor and material payment bond each in an amount equal to the Subcontract Sum and in such form as shall be required by Duke. The bonds shall be executed by a responsible surety licensed in the state in which the Project is located and approved by Duke. The bonds shall remain in effect for a period not less than one (1) year following the date of Substantial Completion or the Subcontractor’s warranty period, whichever is longer. The Subcontractor shall keep the surety informed of the progress of, and changes in, the Work, and requests for reduction or release or retainage or for Final Payment.

2.18 Duke Approvals. Duke shall render decisions and give approvals to the extent required by the Contract Documents. Before performing the Work, the Subcontractor shall inform Duke in writing of any information that is necessary for the Subcontractor’s performance of the Work. Duke’s approval or acceptance of, or payment for, any of the Work shall not be construed or operate as a waiver of any right under this Agreement or of any cause of action arising out of the performance of this Agreement.

**ARTICLE 3**

**THE SUBCONTRACT TIME**

3.1 Project Schedule. The timing of all Work and material and equipment deliveries shall conform to the Project Schedule. Duke shall have the right to modify the Project Schedule to vary the sequence or suspend, delay, or accelerate the commencement or execution of the Work. The Subcontractor shall transfer its laborers to such points as directed by Duke and execute such portions of the Work as may be required to enable other subcontractors to properly carry on their work without delay or interference.

3.2 Subcontractor’s Schedule. Within five (5) days of the execution of this Agreement, the Subcontractor shall prepare a detailed CPM schedule within the constraints of the Project Schedule, including the stated Substantial Completion date. The Subcontractor’s schedule shall include a detailed breakdown of the planned duration, start date and completion date for each activity and estimated dates for delivery of submittals, materials and equipment.

3.3 Acceleration. If the Subcontractor should (1) fail, refuse or neglect to supply a sufficient number of workers or deliver materials or equipment with such promptness as to prevent delay in the progress of the Work; (2) fail to commence and diligently prosecute the Work and proceed to the point to with the Subcontractor should have proceeded in accordance with the Project Schedule in order to achieve Substantial Completion in accordance with the Project Schedule; (3) fail to commence, prosecute, finish, deliver or install the different portions of the Work in accordance with the Project Schedule, or (4) fail in the performance of any of the material covenants of the Subcontract Documents, Duke shall have the right to direct the Subcontractor to prepare a written plan, for Duke’s approval, to accelerate the Work to comply with the Project Schedule, including, without limitation, providing additional labor, expediting deliveries of materials and equipment, performing overtime and/or resequencing the Work, without adjustment to the Subcontract Sum. Upon Duke’s approval of the acceleration plan, the Subcontractor shall accelerate the Work in accordance with the plan.

3.4 Delay Caused by Subcontractor. If the Work or the Project is delayed, disrupted or interfered with by any act or omission of the Subcontractor or any person or entity for whom the Subcontractor is responsible, the Subcontractor shall compensate the Tenant and Duke for, and indemnify them against, all damages, losses and expenses, including attorney’s fees. If the Subcontract Documents or Tenant agreement provide for liquidated damages, and such damages are assessed, Duke may assess damages against the Subcontractor in proportion to
the Subcontractor’s share of responsibility for the delay, not to exceed the amount assessed against Duke. This Section shall not limit the Subcontractor’s liability to Duke.

3.5 Delay to Subcontractor’s Work. If the Subcontractor is delayed at any time in the progress of the Work by any act or neglect of the Tenant or a separate contractor, or by changes order in the Work, labor disputes, fire, unreasonable acts or omissions of governmental authorities having jurisdiction over the Project, adverse weather conditions not reasonably anticipatable, unavoidable casualties, or other causes beyond the Subcontractor’s control, or any delay authorized by Duke, the Subcontract Time shall be extended by Change Order for the period of lost on the critical path of the Project Schedule. The Subcontract Time shall not be extended due to inadequate construction forces, the failure of the Subcontractor to place orders for equipment or materials sufficiently in advance to assure timely delivery, and interruptions to or suspensions of the Work to enable other subcontractors to perform their work. Duke’s exercise of its rights under the Subcontract Documents, including but not limited to changes in the Work, regardless of the extent or number of such changes, shall not be construed as delay, disruption or interference with the Work.

3.5.1 Any claim for an extension of the Subcontract Time shall be made in writing to Duke no later than ten (10) days after the commencement of the occurrence giving rise to the claim; otherwise it shall be waived. The Subcontractor shall provide Duke with an estimate of the probable effect of such occurrence on the progress of the Work.

3.5.2 The Subcontractor may receive an increase in the Subcontract Sum, on the basis of delay, but only if an increase is expressly agreed to by Duke, in its sole discretion, and only for and to the extent of an increase in the Subcontractor's General Conditions caused by a delay to the critical path of the Project Schedule and caused by Duke, a separate contractor, or a suspension of the Work by Duke or the Tenant, but only if the Subcontractor timely submits a written claim to Duke in accordance with applicable provisions of this Agreement. Otherwise, the Subcontractor’s sole remedy for any delay in the commencement, prosecution, or completion of the Work, disruption to or interference with the performance of the Work, loss of productivity, or other similar claims, whether or not foreseeable, shall be an increase in the Contract Time unless caused by acts constituting intentional interference by Duke or the Tenant with the Subcontractor’s performance of the Work where such acts continue after the Subcontractor’s written notice to Duke of such interference. Duke’s exercise of its rights to make changes in the Work, to suspend the Work or to require the correction of damaged, defective or non-conforming Work shall not under any circumstances be construed as intentional interference by Duke. In no event shall the Subcontractor be entitled to any compensation or the recovery of any damages in connection with any such claims, including consequential or incidental damages, lost opportunity costs, impact damages, or other similar remuneration. If the Subcontractor submits a progress report indicating, or the Subcontractor otherwise expresses an intention to achieve, completion of the Work prior to any completion date required by this Agreement or expiration of the Subcontract Time, no liability of Duke to the Subcontractor for any failure of the Subcontractor to so complete the Work shall be created, implied or permitted.

3.6 Work Suspension. Duke may suspend the Work upon two (2) days' written notice to the Subcontractor. The Subcontract shall resume the Work as directed by Duke. If the Project is resumed after being suspended for more than ninety (90) days, the Subcontract Sum shall be equitably adjusted.

ARTICLE 4
PAYMENTS AND COMPLETION

4.1 Schedule of Values. Before the first Application for Payment, the Subcontractor shall submit to Duke a schedule of values and a complete billing breakdown on AIA Form G-703, or similar form provided by Duke, prepared in such form and supported by such data as Duke may require. If approved by Duke, these documents shall be used as the basis for the Subcontractor’s Applications for Payment. Each subsequent Application for Payment must be accompanied by an updated billing breakdown.

4.2 Applications for Payment. Based upon Applications for Payment submitted by the Subcontractor, Duke shall make progress payments to the Subcontractor as provided below and elsewhere in the Subcontract Documents. The period covered by each Application for Payment shall be one calendar month ending on the last day of the month. The Application for Payment must be prepared in duplicate on AIA Form G-702 and G-703, or similar form provided by Duke, and shall indicate the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment. Submission of an Application for Payment shall constitute a representation by the Subcontractor that (1) the Work covered by the Application for Payment has been completed in accordance with the Subcontract Documents, (2) the current payment shown is now due, (3) except as set forth in the Application for Payment, no additional amounts are due, (4) all amounts have been paid by the Subcontractor for
Work for which previous payments have been received, (5) the Subcontractor has complied with and paid all amounts due under federal, state, and local tax laws, including social security, unemployment compensation and workers' compensation laws, and (6) the remaining balance of the Subcontract Sum is sufficient to complete the Work free and clear of all liens and encumbrances.

4.3 Progress Payments. The amount of each progress payment shall be computed as follows: (1) take that portion of the Subcontract Sum properly allocable to completed Work as determined by multiplying the percentage of completion of each portion of the Work by the share of the total Subcontract Sum allocated to that portion of the Work in the schedule of values, less retainage, (2) add that portion of the Subcontract Sum properly allocable to materials and equipment delivered and suitably stored at the Project site by the Subcontractor for subsequent incorporation in the Project or, if approved in advance by Duke, suitably stored off the Project site at a location agreed upon in writing, less retainage, and subtract the aggregate of previous payments made to or on behalf of the Subcontractor.

4.4 Payments by Subcontractor. The Subcontractor shall pay for all labor, materials, equipment and services through the period covered by the previous payment received from Duke, and shall furnish satisfactory evidence, including (as a condition precedent to payment) releases and lien waivers on forms provided by Duke, to verify compliance with this requirement. If payment is made for materials or equipment stored off-site, title shall pass to Duke, but the Subcontractor shall remain fully liable for all such material and equipment until incorporated in the Project. Duke has the right to request written evidence from the Subcontractor that the Subcontractor has properly paid sub-subcontractors and material and equipment suppliers amounts paid by Duke to the Subcontractor. If the Subcontractor fails to furnish such evidence within seven (7) days, Duke shall have the right to contact the sub-subcontractors to ascertain whether they have been properly paid. Duke shall have no obligation to pay or to see to the payment of money to sub-subcontractors, except as may otherwise be required by law. If any payment claim or lien is made or filed with or against Duke, the Tenant or the Project, the Subcontractor shall, within twenty (20) days of the filing of the lien or submission of the claim, satisfy, discharge or bond-off the claim or lien, cause the Tenant and Duke to be dismissed from any action which may be brought in connection with a claim or lien, and compensate the Tenant and Duke for and indemnify them against any and all losses, damages, and expenses, including attorney's fees, sustained or incurred by them.

4.5 Payment Withholding. Duke may withhold payment from the Subcontractor, in whole or in part, to such extent as may be necessary, in Duke's opinion, to protect the Tenant or Duke from loss, including attorney's fees and damages, because of:

.1    defective or non-conforming Work;
.2    third party liens or claims filed or evidence indicating the probable filing of liens or claims;
.3    failure of the Subcontractor to make payments to its laborers, employees, subcontractors, material suppliers or equipment lessors;
.4    damage to the Tenant, Duke, another subcontractor or a separate contractor;
.5    evidence that the Work will not be completed for the unpaid balance of the Subcontract Sum;
.6    evidence that the Work will not be completed within the Subcontract Time; and
.7    failure of the Subcontractor to comply with the safety requirements of this Agreement or to carry out the Work in accordance with the Contract Documents.

When the above reasons for withholding payment are removed, payment will be made for amounts previously withheld with the next Application for Payment that includes such amounts. Duke may, at its sole option, issue joint checks to the Subcontractor and to any sub-subcontractor and material or equipment suppliers, and Duke may, but is not obligated to, make direct payment on behalf of the Subcontractor to any sub-subcontractor and material or equipment suppliers to whom the Subcontractor failed to make payment for Work properly performed or material or equipment suitably delivered, and charge such payments against the Subcontract Sum.

4.6 Substantial Completion. When Duke considers the Work, or a designated portion thereof, to be Substantially Complete, the Subcontractor shall, with its next Application for Payment, request payment for the unpaid balance of the Subcontract Sum, less sums necessary, in Duke's opinion, to cover items to be completed or
4.7 Final Payment. Final payment, constituting the entire unpaid balance of the Subcontract Sum, shall be made to the Subcontractor within seven (7) days after:

.1 The Work has been fully completed in strict accordance with the Subcontract Documents;

.2 The Subcontractor has furnished (1) a general release of all liens and claims and a final lien waiver on forms acceptable to Duke, (2) the number of copies of record drawings required by the Subcontract Documents, and (3) all Operational/Instructional/Maintenance Manuals, warranties, and any other close-out documents required by the Subcontract Documents; and

.3 Duke has received payment from the Tenant.

As a condition precedent to the issuance of final payment, the Subcontractor, if required, shall submit evidence satisfactory to Duke that all indebtedness relating to the Work has been satisfied.

ARTICLE 5
PROTECTION OF PERSONS AND PROPERTY

5.1 Subcontractor Responsibility. The Subcontractor shall take all reasonable safety precautions with respect to the Project. In addition, the Subcontractor shall comply with the safety requirements of Division 1 of the Specifications, other safety requirements and regulations set forth elsewhere in the Subcontract Documents, and all applicable laws, ordinances, rules, regulations and orders of public authorities having jurisdiction over the Project. Before commencing Work, the Subcontractor shall designate a competent person(s) who shall be responsible for the implementation of the safety requirements of this Agreement, and who shall cooperate with the other subcontractors to the extent necessary to assure Project safety. A safety representative employed by Duke or an insurer may, from time to time, conduct safety inspections and submit safety findings. The Subcontractor shall, at its expense, implement any abatement procedures recommended by such safety representative.

5.2 Hazardous Substances. A “Hazardous Substance” is any substance or material identified as hazardous under any federal, state or local law or regulation, or any other substance or material that may be considered hazardous or otherwise subject to statutory or regulatory requirement governing handling, disposal and/or cleanup. Hazardous substances shall not be used without the prior written consent of Duke, and the Subcontractor shall be responsible for Hazardous Substances brought to the site by the Subcontractor unless such Hazardous Substances were expressly required by the Subcontract Documents. Neither Duke nor the Tenant shall be responsible for Hazardous Substances brought to the Project site by the Subcontractor or its sub-subcontractors. The Subcontractor shall defend, indemnify and hold harmless Duke and the Tenant from and against any and all direct claims, damages, losses, costs and expenses, including but not limited to attorneys’ fees, arising out of or relating to the use or storage of Hazardous Substance for the execution of the Work.

ARTICLE 6
INSURANCE

6.1 Liability and Employee Insurance. The Subcontractor shall purchase and maintain insurance for protection against all claims that arise out of or result from the Subcontractor’s Work and operations, whether performed by the Subcontractor or anyone for whose acts the Subcontractor may be liable, including the following types with the following limits:
Worker’s Compensation. Required

Employer’s Liability covering all employees, volunteers, temporary employees and leased workers.

$1,000,000 each accident, $1,000,000 disease each employee, and $1,000,000 disease policy limits.

Commercial General Liability (form CG 00 01 or its equivalent), for bodily injury and property damage including personal injury, premises/operations, broad form property damage, independent contractors, products and completed operations (with limits of $3,000,000 and coverage for a minimum period of two (2) years after Substantial Completion), including (1) explosion, collapse, shoring, grading and or underground property damage hazards, (2) damages or injury arising from defective Work, including costs to repair or replace damaged Work, and (3) contractual liability coverage (the Commercial General Liability insurance may be arranged under a single policy for the full limits required or by a combination of underlying policies with the balance provided by an Excess or Umbrella Liability Policy).

$3,000,000 per occurrence

Commercial Automobile Liability, including owned, non-owned and hired car coverages.

$1,000,000 combined single limit for bodily injury and property damage.

6.1.1 Insurers and Policies. The insurance shall be procured from companies licensed to do business in the state in which the Project is located. The insurers must have a minimum AM Best rating of AVIII. All insurance procured or maintained by the Subcontractor shall be primary. Any insurance maintained by Duke or the Tenant shall be considered excess and non-contributory. Coverage shall be on an occurrence basis, except for professional liability which shall be on a claims made basis. Except with respect to bodily injury and property damage included within the products and completed operations hazards, the aggregate limit shall apply per Project to the Subcontractor’s Work. The Subcontractor waives all rights against Duke, the Tenant and separate contractors for damages covered by the Subcontractor’s insurance. The Subcontractor shall permit Duke to examine the actual policies upon request.

6.1.2 Evidence of Insurance. Certificates of Insurance acceptable to Duke shall be submitted to Duke prior to commencement of the Work, and thereafter upon renewal or replacement of each required policy of insurance. The Certificates shall contain a provision that coverage shall not be canceled until at least thirty (30) days’ prior written notice has been given to Duke. The Certificates for the commercial general liability, automobile liability and any umbrella or excess liability policies shall name Duke, the Tenant and the Tenant’s lenders as additional insureds, and as additional insureds for claims caused in whole or in part by the Subcontractor’s negligent acts or omissions during the Subcontractor’s completed operations. The additional insured endorsement shall state that coverage is afforded the additional insureds as primary and non-contributory. Subcontractor agrees to waive any and all rights of subrogation against the additional insureds. Duke shall withhold all payments to the Subcontractor until such Certificates of Insurance are received by Duke. Duke shall have the right, but not the obligation, to prohibit the Subcontractor from entering the Project site until such Certificates have been received and approved by Duke. The failure of Duke to demand such Certificates or to identify a deficiency in the evidence of insurance provided shall not be construed as a waiver of the Subcontractor’s obligation to maintain the insurance. If the Subcontractor fails to maintain any required insurance, the Subcontractor shall be in default and Duke shall have the right, but not the obligation, to purchase the insurance at the Subcontractor’s expense, stop the Work, or terminate this Agreement.

6.1.3 Sub-subcontractors. The Subcontractor shall cause its sub-subcontractors to procure insurance satisfying the requirements of this Article and naming Duke, the Tenant and the Tenant’s lender as additional insureds under their commercial general liability, automobile liability, and any umbrella or excess liability
policies, as provided in Section 6.1.2 and all such insurance shall be on a primary basis. All insurance maintained by Duke shall be considered excess.

6.2 Property Insurance. If the Subcontractor makes a claim covered by the Builder's Risk or property insurance policy maintained in connection with the Project, the Subcontractor shall be responsible for, and shall permit the proceeds of its claim to be reduced by, the amount of the deductible required under the Builder's Risk or property insurance policy irrespective of the cause or nature of the occurrence giving rise to the claim.

6.2.1 The Builder's Risk property insurance policy shall not include coverage for any tools, apparatus, machinery, scaffolding, hoists, forms, staging, shoring, equipment, materials and supplies that are not incorporated into the completed construction, and the Subcontractor shall make its own arrangements for any insurance it may require to protect such items. The Subcontractor shall provide property and equipment insurance for the full value of all materials and equipment stored off-site or in transit, unless Duke issues a specific written waiver of this requirement. The Subcontractor waives all claims and all rights of subrogation against Duke and the Owner for loss of, or damage to, the Subcontractor's tools, equipment, materials, and supplies.

6.2.2 The Contractor and Subcontractor waive all rights against (1) each other and any of their subcontractors, agents and employees, and (2) the Tenant, separate contractors, and any of their subcontractors, agents and employees for damages caused by fire or other causes of loss to the extent covered by Builder's Risk or other property insurance applicable to the Work, except such rights as they may have to proceeds of such insurance. The Subcontractor shall require similar waivers of its subcontractors, agents and employees.

6.3 Recommendations of Insurers. The Subcontractor and Duke shall cooperate and comply with all reasonable requirements and recommendations of the insurers and insurance brokers issuing or arranging for issuance of the insurance policies required by this Article, including requirements and recommendations relating to safety, insurance program administration, claims reporting and investigation, and audit procedures.

ARTICLE 7
CHANGES IN THE WORK

7.1 Modifications. Duke may make changes in the Work by issuing a Modification. A "Modification" is a Change Order or other written directive to the Subcontractor signed and issued by Duke. All changes in the Work shall be performed under the applicable conditions of the Subcontract Documents.

7.2 Change Orders. The Subcontract Sum and the Subcontract Time shall be changed only by Change Order. A Change Order signed by Duke and the Subcontractor conclusively establishes the Subcontractor's agreement therewith, including the adjustment in the Subcontract Sum and the Subcontract Time. The Subcontractor shall submit a properly itemized Change Order Proposal covering additional or deleted Work. The proposal shall be itemized for the various components of the Work and segregated by labor, material, and equipment in a detailed format satisfactory to Duke and advise Duke of the anticipated impact on the Subcontract Time. Details to be submitted include detailed line item estimates showing detailed materials quantities, take-offs, material prices by item and related labor hour pricing information and extensions (by line item). The Subcontractor's Change Order Proposal shall be submitted within seven (7) days of Duke's request, unless Duke extends such period of time due to the circumstances involved. The Subcontractor's failure to so advise Duke within the specified time period shall constitute a waiver of the Subcontractor's right to an increase in the Subcontract Time or the Subcontract Sum.

7.3 Pricing. The adjustment to the Subcontract Sum resulting from a Modification shall be determined by (1) a lump sum amount agreed upon, itemized and supported by sufficient substantiating data to permit evaluation, (2) unit prices stated in the Subcontract Documents or subsequently agreed upon, or (3) costs agreed upon and a mutually acceptable fixed or percentage fee. If none of these methods are used, the Subcontractor shall promptly proceed with the Modification and the adjustment to the Subcontract Sum shall be determined by Duke on the basis of the reasonable costs and savings attributable to the Modification.

7.3.1 The Subcontractor shall keep and present, in such form as Duke may prescribe, an itemized accounting together with appropriate supporting data. "Costs" shall be limited to the reasonable cost of materials (including sales tax and delivery), labor (including social security, unemployment insurance, and fringe benefits required by agreement or custom), workers' compensation insurance, bond premiums, the rental value of equipment and machinery, and additional costs of supervision and field office personnel directly attributable to the Modification.
7.3.2 If a Modification is performed on a “Time and Material” basis, the Subcontractor shall submit to Duke timesheets and work orders at the end of each day worked to verify charges for that day. Otherwise, Duke may reject payment for the “Time and Material” work.

7.4 Buy-Outs. The Subcontractor shall not engage in the practice of inflating Change Order Proposals (generally known as buyouts) by submitting prices to Duke that are higher than the Subcontractor’s actual known costs. Each component of a proposed Change Order affecting the Subcontract Sum shall be supported by an underlying cost element and documentation evidencing actual costs. Where a price has been obtained that is lower than what was submitted in an original proposed Change Order (for whatever reason or through whatever means), the Subcontractor shall pass along such savings to Duke. If the lower price is obtained prior to the execution of a Change Order, such savings shall be incorporated into the proposed Change Order prior to execution. If a Change Order has already been executed, a deductive Change Order shall be issued to Duke for the difference.

7.5 Concealed Conditions. The Subcontractor represents to Duke that the Subcontractor (1) is experienced and skilled in the construction of structures and improvements of the type described in the Subcontract Documents, and (2) has, by careful examination, satisfied itself as to and has taken into account the nature, location and character of the Project site, including, without limitation, the surface and subsurface (by review of available reports and information), condition of the Project site and all structures and obstructions thereon, both natural and man-made, and all surface and subsurface (to the extent reasonably identified by review of available reports and information), water conditions of the Project site and surrounding area and the nature, location and character of the general area in which the Project site is located. Should concealed, unknown subsurface conditions be encountered in the performance of the Work and such conditions either (1) differ materially from the conditions indicated by the Subcontract Documents and should not have been known to the Subcontractor given the foregoing representations by the Subcontractor, or (2) are of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in Work given the foregoing representation by the Subcontractor, the Subcontract Sum shall be equitably adjusted by Change Order upon written claim by the Subcontractor, if made within ten (10) days after the first observance of the conditions. However, surveys and other documents describing the physical characteristics, legal limitations or utility locations for the Project site that are not identified as Subcontract Documents are for informational purposes only and Duke shall not be liable for inaccuracies or omissions therein, nor shall any inaccuracies or omissions in such items relieve the Subcontractor of its responsibility to perform the Work in accordance with the Subcontract Documents.

7.6 Audits. Duke shall be permitted to review, audit and copy the Subcontractor’s records relating to Change Order Proposals, Change Orders and changed work (whether based on lump sum, unit prices, or costs) upon reasonable notice and during normal business working hours throughout the term of this Agreement and for a period of three (3) years after final payment or longer if required by law. “Records” shall include any and all information, materials and data of every kind and character (hard copy as well as computer readable data) that may, in Duke’s judgment, have any bearing on or pertain to the pricing of changed, added or deleted Work and the accuracy of the Subcontractor’s representations regarding pricing and claims information submitted by the Subcontractor. If an audit or examination in accordance with this Section discloses overcharges by the Subcontractor, the cost of Duke’s audit shall be immediately reimbursed by the Subcontractor in addition to the overcharges.

7.7 Forms. The form and content of all recurring documents (i.e. Change Orders, Field Orders, reports and timesheets) may be designated by Duke, and the Subcontractor agrees to use such forms.

ARTICLE 8
DISPUTE RESOLUTION

8.1 Claims. The Subcontractor shall make all claims for an increase in the Subcontract Sum or the Subcontract Time in accordance with the Subcontract Documents and in strict compliance with the procedures provided below. If the Subcontractor claims that it is entitled to additional sums or time, for any reason whatsoever, the Subcontractor shall give Duke written notice of the claim within ten (10) days after the occurrence giving rise to the claim or within ten (10) days after the Subcontractor first recognizes the condition giving rise to the claim, whichever is later. The notice of the claim shall set forth the circumstances giving rise to the claim, and to the extent reasonably available, facts, documents, backup data and other information supporting the claim and the relief sought. Failure by the Subcontractor to provide written notice of the claim shall result in a waiver of the claim. Within thirty (30) days after providing written notice of a claim, the Subcontractor shall submit complete support for the claim including without limitation documents, backup data and other information supporting the claim, the relief sought, and those persons with knowledge of the claim. No additional sums shall be paid to the Subcontractor, and no additional
time shall be granted or recognized, unless the Subcontractor has received a written Change Order signed by Duke's Project Manager. VERBAL CHANGES OR EXTRAS SHALL NOT BE VALID OR ENFORCEABLE.

8.2 Disputes Involving the Tenant. A claim which will affect or become part of a claim which Duke will or may make against the Tenant shall be submitted by the Subcontractor in sufficient time to permit Duke to make the claim against the Tenant in a timely manner. Failure of the Subcontractor to make such timely claim shall bind the Subcontractor to the same consequences as those to which Duke is bound. If Duke asserts or defends a claim against the Tenant which relates to the Work of the Subcontractor, the Subcontractor shall make available to Duke all requested documentation and information relating to that portion of the claim and the Subcontractor shall be bound by the outcome of the dispute resolution procedure between the Tenant and Duke. The Subcontractor shall reimburse Duke for all costs and expenses, including attorney's fees, incurred by Duke in defending a claim by, or prosecuting a claim against, the Tenant or any other party if such claim relates to or arises from the Subcontractor's Work. Duke shall pay the Subcontractor a proportionate share of any recovery received from the Tenant on the basis of the ratio of the Subcontractor's claims to other claims that are asserted, less Duke's costs, expenses and attorney's fees. Likewise, the Subcontractor shall indemnify Duke against, and reimburse Duke for, a proportionate share of any recovery by the Tenant involving the Subcontractor's Work, plus Duke's costs, expenses and attorney's fees.

8.3 Disputes Not Involving the Tenant.

8.3.1 If a dispute arises out of or relates to the Project, the Work, the Subcontract Documents or this Agreement or any breach thereof, the parties shall endeavor to settle the dispute first through direct discussions between the parties' representatives who have the authority to settle the dispute. If the parties' representatives are not able to promptly settle the dispute, the executives of the parties, who shall have the authority to settle the dispute, shall meet within twenty-one (21) days after the dispute first arises. If the dispute is not settled within seven (7) days from the referral of the dispute to the parties' executives, the parties shall submit the dispute to mediation in accordance with Section 8.3.2.

8.3.2 If the dispute cannot be settled pursuant to Section 8.3.1, the parties shall endeavor to settle the dispute by mediation under the current Construction Industry Mediation Rules of the American Arbitration Association before recourse to arbitration. Once a party files a request for mediation with the other party and with the American Arbitration Association, the parties agree to conclude such mediation within sixty (60) days of filing of the request. Either party may terminate the mediation at any time after the first session, but the decision to terminate shall be delivered in person by the party's representative to the other party's representative.

8.3.3 If the dispute cannot be settled pursuant to Sections 8.3.1 and 8.3.2, all controversies, claims, disputes and other matters in question arising out of or relating to the Project, the Work, the Subcontract Documents, or this Agreement or any breach thereof shall be settled by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then in effect. Any arbitration proceeding initiated under the terms of this Agreement may, at the request of either party, be joined or consolidated with other arbitration proceedings involving additional parties if the controversies, claims, disputes or other matters in question arise out of or relate to the Project, the Work, the Subcontract Documents or this Agreement or any breach thereof. Notice of demand for arbitration shall be filed in writing with the other party and with the American Arbitration Association. The demand shall be made within a reasonable time after the controversy, claim, dispute or other matter in question has arisen. In no event shall the demand for arbitration be made after the date when the applicable statute of limitations would bar the institution of a legal or equitable proceeding based on such controversy, claim, dispute or other matter in question. The party filing a notice of demand for arbitration must assert in the demand all claims, disputes and other matters then known to that party on which arbitration is permitted to be demanded. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the claim, dispute or other matter in question. The award rendered by arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction.

8.4 Limitations Period. The Subcontractor shall commence all claims and causes of action, whether in contract, tort, or otherwise, against the other arising out of or related to this Agreement within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work.

8.5 Waiver of Consequential Damages. The Subcontractor waives all claims against Duke and the Tenant for consequential damages arising out of or relating to this Agreement. This mutual waiver includes but is not limited to damages incurred by the Subcontractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated
8.6 Continued Performance. The Subcontractor shall continue performance of the Work, if directed by Duke, in the event of a dispute; the existence of a dispute shall not justify delay or suspension of the Work by the Subcontractor. Failure to so proceed shall constitute a material breach of this Agreement by the Subcontractor, regardless of the ultimate outcome of the dispute.

ARTICLE 90
TERMINATION

9.1 Default. If, in the opinion of Duke, Subcontractor fails to provide a sufficient number of properly skilled laborers or adequately supervise the Work, or fails in any material respect to prosecute the Work according to Project Schedule, cause delay to, disruption of, or interference with the work of Duke or any other subcontractor, or fails in any material respect to comply with any other provisions of the Subcontract Documents, makes a general assignment for the benefit of creditors, has a receiver appointed, becomes insolvent or files for protection under the Bankruptcy Code (collectively, "Default"), Duke may, after forty-eight (48) hours written notice to the Subcontractor:

1. take such steps to correct, cure or overcome the Default as Duke deems expedient, and charge all expenses, losses, costs and damages, including attorney's fees, to the Subcontractor; or

2. terminate this Agreement.

Upon Default, Duke may exclude the Subcontractor from the site and take possession of all materials, equipment, tools and construction equipment and machinery thereon owned or leased by the Subcontractor. If Duke terminates this Agreement, Duke may finish the Subcontractor's Work by whatever method Duke deems expedient. If the unpaid balance of the Subcontract Sum exceeds the expense of finishing the Subcontractor's Work and other losses, costs and damages incurred by Duke, including attorney's fees, such excess shall be paid to the Subcontractor. If such expense and other losses, costs and damages, including attorney's fees, exceed the unpaid balance of the Subcontract Sum, the Subcontractor shall pay the difference to Duke.

9.2 For Convenience. Duke may, at any time, terminate this Agreement for its convenience. Upon receipt of written notice of termination, the Subcontractor shall cease operations as directed by Duke in the notice, take actions necessary, or as Duke may direct, for the protection and preservation of the Work, and terminate all existing subcontracts and purchase orders. Provided the Subcontractor is not in Default, the Subcontractor shall receive, as full compensation, its actual, necessary, and reasonable costs of performing the Work to date of termination, plus a reasonable markup for overhead and profit on Work performed. The Subcontractor shall make its records available for Duke's review. In the event any termination of the Subcontractor for Default is later determined to have been improper, the termination shall automatically convert to a termination for convenience, and the Subcontractor shall be limited in its recovery strictly to the compensation provided for in this Paragraph.

ARTICLE 10
MISCELLANEOUS PROVISIONS

10.1 Assignment. Duke may assign this Agreement to the Tenant, subject to the prior rights of sureties, if any. In such event, the Tenant shall assume Duke's rights and obligations under this Agreement. The Subcontractor shall not assign this Agreement.

10.2 Written Notice. Written notice shall be deemed to have been duly served if delivered in person or sent by (1) registered or certified mail to the address shown on the first (title) page of this Agreement, (2) facsimile with confirmed receipt, or (3) electronic transmission with a hard-copy delivered within seven (7) days after the transmission.

10.3 No Third Party Beneficiary Rights. The Subcontract Documents shall confer no right, benefit or remedy, either intended or incidental, upon the Subcontractor or its sub-subcontractors, laborers, material suppliers or equipment lessors to enforce the Subcontract Documents against the Tenant or to make any claim or demand against the Tenant.

10.4 Representation. The Subcontractor represents and warrants the following to Duke (in addition to any other representations and warranties contained in the Subcontract Documents) as a material inducement to Duke.
to execute this Agreement, which representations and warranties shall survive the execution of the Agreement, any
termination of the Agreement and the final completion of the Work:

.1 The Subcontractor and, to the best of its knowledge, its sub-subcontractors, are
financially solvent, able to pay all debts as they mature and are possessed of sufficient
working capital to complete the Work and perform all obligations hereunder;

.2 the Subcontractor is able to furnish the tools, materials, supplies, equipment and labor
required to complete the Work and perform its obligations hereunder;

.3 the Subcontractor is authorized to transact business in the State and locale of the Project
and is properly licensed by all necessary authorities having jurisdiction over it, the Work
and the Project;

.4 the Subcontractor’s execution of the Agreement is within its duly authorized powers; and

.5 the Subcontractor is a sophisticated contractor which possesses a high level of
experience and expertise in the business administration, construction and
superintendence of projects of the size, complexity and nature of the Project and will
perform the Work with the care, skill and diligence of such a contractor.

10.5 OFAC Compliance. The Office of Foreign Assets Control (OFAC) prohibits US persons from
entering into transactions with individuals, groups, and entities, such as terrorists, narcotics traffickers and those
engaged in activities related to the proliferation of weapons of mass destruction, collectively referred to as Specially
Designated Nationals (“SDN”). The Subcontractor warrants and represents that neither it nor any individual in a
management position with the Subcontractor is named on the SDN list. If the name of the Subcontractor or any
individual in a management position with the Subcontractor is discovered on the SDN list, published by OFAC, such
discovery shall constitute a material breach of this Agreement. Duke shall promptly notify the Subcontractor, which
shall have three (3) days in which to provide to Duke clear and convincing evidence that (a) neither the Subcontractor
nor any individual in a management position with the Subcontractor is an SDN, (b) the transaction is authorized by
OFAC, or (c) a statutory exemption exists that permits Duke to do business with the Subcontractor. Should the
Subcontractor fail to do so, then Duke shall terminate this Agreement for cause without further notice or grace period.
EXHIBIT A
SUBCONTRACT GENERAL CONDITIONS TI-SC2

ARTICLE 1
SUBCONTRACT DOCUMENTS

1.1 Subcontractor Investigation. The Subcontractor represents that it has investigated the nature, locality, and site of the Project and the conditions and difficulties under which the Work is to be performed, and enters into this Agreement on the basis of its own investigation and evaluation and not in reliance upon any opinions or representations of Duke, the Tenant, or the Architect.

1.2 Intent of the Subcontract Documents. The intent of the Subcontract Documents is to include all items necessary for the proper execution and completion of the Work, including all incidental work necessary for the completion of the Work even though not specifically described in the Subcontract Documents. The Subcontract Documents are complementary; what is required by one shall be as binding as if required by all. The organization and arrangement of the Subcontract Documents shall not control Duke in dividing the work among the subcontractors or in establishing the extent of work to be performed by a Subcontractor. The terms “knowledge,” “recognize,” and “discover,” and their respective derivatives, when used in reference to the Subcontractor, shall be interpreted to mean that which the Subcontractor knows (or should know), recognizes (or should recognize), and discovers (or should discover) in exercising reasonable care and skill.

1.3 Inconsistencies or Conflicts. The Subcontractor shall promptly call to the attention of Duke any discrepancy or conflict in the Subcontract Documents which affects the Work. In the event of a conflict or discrepancy in the Subcontract Documents, Duke shall determine which takes precedence. This Agreement shall take precedence over the other Subcontract Documents, figure dimensions shall take precedence over scale measurements, large scale details shall take precedence over small scale drawings, and drawings of a later date shall take precedence over those of an earlier date.

1.4 Applicable Law. This Agreement shall be governed by the laws of the state where the Project is located, except that the Federal Arbitration Act shall govern the arbitration provisions of this Agreement. The Subcontractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Subcontract Documents shall confer no benefit, right, or remedy upon the Subcontractor to make claims or demands against the Tenant.

1.5 Minority, Women and Disadvantaged Business Enterprises. The Subcontractor expressly acknowledges that it is a condition of this Agreement that it make good faith best efforts to utilize minority business enterprises (MBEs), woman business enterprises (WBEs), and disadvantaged business enterprises (DBEs) for the Project, including such efforts to award or cause to be awarded subcontracts and purchase orders therefore. The Subcontractor shall provide a list, if expressly identified as part of the Work, of all of its MBE, WBE and DBE subcontractors and vendors detailing the scope of work and the dollar amount of each. The Subcontractor agrees that Duke shall have access to the personnel of the Subcontractor (and its sub-subcontractors and vendors) and documents in order to monitor, review and ensure compliance with this Section.

ARTICLE 2
DESIGN

2.1 Preliminary Design Documents. If the Construction Documents have not been finalized as of the date of the Agreement, the Subcontractor shall comply with Sections 2.1 through 2.8; the Drawings and Specifications that have been furnished to the Subcontractor as of the date of the Agreement are identified in the Agreement as the “Preliminary Drawings and Specifications” and are attached to the Agreement as Exhibit B. If the Construction Documents have been finalized as of the date of the Agreement, the Construction Documents are identified in Exhibit B-1 to the Agreement, and the Subcontractor agrees that it prepared its Construction Documents pursuant to Sections 2.1 and 2.2 below and in conformity with the Preliminary Drawings and Specifications identified in Exhibit B to the Agreement.

2.1.1 The Subcontractor shall visit the Project site, become familiar with the local conditions, and correlate observable conditions with the requirements of the Preliminary Design Documents. The Subcontractor shall review laws applicable to design and construction of the Project, correlate such laws with the Preliminary Design Documents, and advise Duke if any requirements may cause a violation of such laws.

2.1.2 The Subcontractor shall attend meetings with Duke and its design professionals and shall consult with them regarding alternate approaches to design and construction. The Subcontractor shall make
recommendations with respect to the selection of building systems, equipment, and materials, construction feasibility, time requirements for procurement, installation and completion of the proposed construction, and estimates of construction cost for alternative designs.

2.1.3 If phased construction or early procurement of long-lead time items is appropriate for the Project, the Subcontractor shall make recommendations to Duke.

2.2 Construction Documents. Based upon the Preliminary Design Documents and the Subcontractor’s review, investigation and services provided under Section 2.1, the Subcontractor shall prepare and submit to Duke for its approval the Construction Documents for the Subcontractor’s scope of Work. The Construction Documents are the Drawings and Specifications establishing the requirements of the Work, including technical drawings, schedules, diagrams and shop drawings setting forth in detail the Work, the relationship of the Project components, and all related and necessary design documents, samples, and data and information relating to the specifications for the methods proposed for the Work. The Subcontractor shall work closely with Duke and its design professionals to assure that the Subcontractor’s Construction Documents are consistent, compatible and coordinated with the other design documents and shall meet the Owner’s criteria as to the purpose, nature and scope of the Project. The Construction Documents shall be consistent with the Preliminary Design Documents, provide information for the use of the Subcontractor and those in the building trades, be in accordance with all applicable codes, laws and regulations in effect at the time the Construction Documents are submitted to Duke, be certified by licensed and qualified design professionals, and include documents customarily required for governmental and public approvals.

Once approved by Duke and the Tenant, the Construction Documents shall be identified by Change Order or an addendum to this Agreement and shall be included within the definition of the “Subcontract Documents.”

2.3 Approvals and Fees. The Subcontractor shall file documents required to obtain necessary approvals of governmental authorities having jurisdiction over the Project. The Subcontractor shall pay royalties and license fees for patented designs, processes or products. The Subcontractor shall defend suits or claims for infringement of patent rights and shall hold Duke and the Tenant harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer is required by the Tenant. However, if the Subcontractor has reason to believe the use of a required design, process or product is an infringement of a patent, the Subcontractor shall be responsible for such loss unless such information is promptly furnished to Duke and the Tenant.

2.4 Technical Assistance. The Subcontractor shall provide technical assistance to Duke with respect to any questions, requested interpretations or clarifications or any problems concerning the Subcontractor’s Construction Documents. The Subcontractor shall, in a timely manner as to avoid delay to the progress of the Work, notify Duke and all affected subcontractors of all necessary or advisable design changes or modifications reasonably necessary to void additional cost or expense or conflicts with the work of other subcontractors. The Subcontractor shall be liable for any costs or expenses incurred by the Subcontractor’s failure to provide such notice in a timely manner.

2.5 Schedule. The Subcontractor shall submit its Construction Documents and complete its design Work in accordance with the Project Schedule attached hereto as Exhibit C or as otherwise directed by Duke.

2.6 Changes. As long as the Subcontractor complies with the applicable requirements of Article 8, the Subcontractor shall be entitled to an increase in the Subcontract Sum for the reasonable cost of making significant revisions in the Construction Documents when such revisions are:

.1 inconsistent with written approvals or instructions previously given by Duke; or

.2 required by the enactment or revision of codes, laws or regulations subsequent to the execution of this Agreement.

2.7 Instruments of Service. "Instruments of Service" means representations, in any medium of expression (whether existing as of the date of this Agreement or later developed) of the tangible and intangible creative work of the author prepared in relation to the Project, including architectural and engineering plans and drawings, specifications, computer-aided design, calculations, studies, surveys, models, sketches and other such materials and electronic/digital information produced in relation to the design of the Project. Submission or distribution of Instruments of Service to meet official regulatory requirements or for similar purposes shall not be construed as publication of the rights of Duke, the Subcontractor and the Subcontractor’s design professionals.
2.7.1 The Subcontractor and its design professionals shall hold and own all copyrights in Instruments of Service prepared or furnished by them. Upon the execution of this Agreement, the Subcontractor gives Duke a nonexclusive and irrevocable license to use and reproduce Instruments of Service (regardless of whether Duke or the Subcontractor terminates this Agreement for any reason) for the completion of the Project, and to use, reproduce and make derivative works from Instruments of Service for additions, renovations, and other alterations to the Project and for Duke’s design of other projects, but Duke’s use of Instruments of Service for additions, renovations, and other alterations to the Project or for other projects without the Subcontractor’s involvement shall be at Duke’s own risk and without liability to the Subcontractor. This license is for the benefit of Duke and its assigns and permits Duke to retain other design professionals who may use Instruments of Service for such purposes. The Subcontractor shall obtain this license from its design professionals for the benefit of Duke.

2.7.2 Instruments of Service may contain unique or distinctive architectural components that are valuable to Duke as “trade dress” and Duke’s license shall be exclusive as to such components. Neither the Subcontractor nor its design professionals shall use or reproduce or permit the use or reproduction of Instruments of Service, or the creation of derivative works based on Instruments of Service, for other projects that use or incorporate such unique or distinctive architectural components or which, taken independently or in combination, would produce a project with substantially similar and distinctive features. In the event Instruments of Service prepared by the Subcontractor or its design professionals are hopelessly commingled with Instruments of Service prepared by Duke or its separate design professionals or consultants, Duke shall hold and own the copyrights in such commingled Instruments of Service.

2.7.3 Duke shall be given reasonable access to review and reproduce Instruments of Service and, if requested by Duke, the Subcontractor shall provide Duke with an electronic/digital set of Instruments of Service in a medium reasonably requested by Duke. The Subcontractor shall not include any photographic or artistic representation of the design of the Project among the Subcontractor’s promotional materials except with Duke’s written permission.

2.8 Standard of Care. The design Work shall be performed in accordance with the professional standards applicable to such services given the size, complexity and nature of the Project.

2.8.1 The Subcontractor shall be responsible to Duke and the Tenant for acts and omissions of the Subcontractor’s employees, subcontracts and their agents and employees, and other persons, including design professionals, performing any portion of the Subcontractor’s obligations under this Article 2.

2.8.2 If the Subcontractor believes or is advised by a design professional retained to provide services on the Project that implementation of any instruction received from Duke would cause a violation of applicable law, the Subcontractor shall notify Duke in writing.

ARTICLE 3
CONSTRUCTION

3.1 Coordination and Supervision. The Subcontractor shall coordinate, supervise and direct the Work and shall cooperate with Duke in scheduling and performing the Work to avoid conflict, delay or interference with the work of Duke, other subcontractors and the Tenant’s own forces and separate contractors. The Subcontractor shall be responsible for all construction means, methods, techniques, sequences and procedures. The Subcontractor shall notify Duke in writing of any deficiencies in any other work prior to the commencement of the Work. Any unreported deficiencies shall be deemed accepted by the Subcontractor and shall become the responsibility of the Subcontractor.

3.2 Superintendent. The Subcontractor, as soon as practicable after the execution of this Agreement, shall furnish in writing to Duke the name and qualifications of a proposed superintendent, foreman, or other site supervisor. Duke may reply within 14 days to the Subcontractor in writing stating (1) whether Duke has reasonable objection to the proposed superintendent, foreman, or other site supervisor (2) that Duke requires additional time to review. Failure of Duke to reply within the 14 day period shall constitute notice of no reasonable objection. The Subcontractor shall not employ a proposed superintendent, foreman, or other site supervisor, to whom Duke has made reasonable and timely objection. The Subcontractor shall not change the superintendent, foreman, or other site supervisor, without Duke’s consent, which shall not unreasonably be withheld or delayed.

3.3 Employees. The Subcontractor shall be responsible for its employees, laborers, material suppliers, equipment lessors, agents and representatives. The Subcontractor shall remove from the Project any person or entity under the Subcontractor’s control which Duke considers unsatisfactory. The Subcontractor shall assure
harmonious labor relations to prevent delay, disruption or interference to the Project, and shall prevent strikes, slowdowns, work interruptions, jurisdictional disputes and other labor disputes relating to the Work.

3.4 **Representative.** The Subcontractor shall designate a single representative assigned to the Project who shall be responsible for attending all weekly and other meetings, monitoring schedules and coordinating all activities. The Subcontractor’s representative shall have the authority to commit and bind the Subcontractor.

3.5 **Meetings and Reports.** The Subcontractor shall communicate with the Tenant and the Architect only through Duke. The Subcontractor shall furnish to Duke periodic progress reports on the Work in such form as requested by Duke, including information on the status of materials and equipment which may be in the course of preparation, manufacture or transit. Regularly scheduled progress meetings shall be held weekly, unless otherwise directed, and the Subcontractor’s attendance is mandatory.

3.6 **Permits, Fees and Notices.** The Subcontractor shall secure and pay for all permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work. The Subcontractor shall comply with all laws, ordinances, rules, regulations and orders in effect in the state and locale of the Project and of any public authority having jurisdiction over the Work. If the Subcontractor performs any Work which the Subcontractor knows, or should know, is contrary to such laws, ordinances, rules, regulations, or orders, the Subcontractor shall assume full responsibility and bear all costs attributable thereto. The Subcontractor shall comply with, and assume financial responsibility for, all applicable federal, state and local tax laws, social security acts, unemployment compensation acts and workers’ compensation acts. Except as otherwise provided by the Subcontract Documents, the Subcontractor shall pay all royalties and license fees relating to the Work. The Subcontractor shall defend all suits or claims for infringement of patent rights that may be brought against Duke, the Tenant or the Architect relating to the Work, and shall be liable for all related losses, costs and expenses, including attorney’s fees.

3.7 **Submittals.** The Subcontractor shall timely prepare, review, approve and submit to Duke all shop drawings, product data and samples required by the Subcontract Documents (“Submittals”). The Subcontractor shall cooperate with Duke in the coordination of the Submittals with those of other subcontractors. By submitting Submittals, the Subcontractor represents that it has verified all related materials, field measurements and field construction criteria for conformity with the requirements of the Subcontract Documents. The Subcontractor shall not be relieved of responsibility for any deviation from the Subcontract Documents by the approval of Submittals.

3.8 **Submittal Schedule.** The Subcontractor shall prepare a submittal schedule, promptly after the execution of this Agreement and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for Duke’s approval. Duke’s approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Subcontractor’s construction schedule, and (2) allow Duke and the Architect reasonable time to review submittals. If the Subcontractor fails to submit a submittal schedule, the Subcontractor shall not be entitled to any increase in Subcontract Sum or extension of Subcontract Time based on the time required for review of submittals.

3.9 **Site Access.** The Subcontractor is responsible for its Project site access, subject to Duke’s general coordination. The Subcontractor shall keep roads, walks, ramps, and other areas on and adjacent to the Project site in good working order and condition and free from obstructions which might present a hazard to or interfere with traffic or the public, and shall provide adequate barricades, signs and other devices for traffic guides and public safety. When construction operations necessitate the closing of traffic lanes, the Subcontractor shall be responsible for arranging such closing in advance with authorities having jurisdiction over the lanes. The Subcontractor shall confine operations at the Project site to areas permitted by law, ordinances, permits and the Subcontract Documents.

3.10 **Cutting and Patching.** The Subcontractor shall leave all openings and effect all cutting, fitting or patching of its Work required to make its several parts fit together properly or to receive or be received by the work of other subcontractors. All cutting of structural members shall be performed by the subcontractor responsible for the involved structural work, subject to the review and approval of Duke and the structural engineer. The Subcontractor shall not cut or otherwise alter the work of the Tenant or any separate contractor without the written consent of Duke.

3.11 **Cleaning Up.** The Subcontractor shall at all times keep the Project free from the accumulation of waste materials caused by the Subcontractor’s operations. Upon completion of the Work, the Subcontractor shall remove all waste materials and the Subcontractor’s tools, equipment, machinery and surplus materials. If the Subcontractor fails to clean up, Duke may do so and the cost shall be charged to the Subcontractor. In the event of a dispute between subcontractors as to the responsibility for clean up, Duke may perform the clean up and allocate the cost among the subcontractors. Duke’s allocation of cost shall be binding on the Subcontractor.
3.12 Temporary Facilities. The Subcontractor shall provide, maintain, and remove all temporary offices, structures, sheds and storage facilities and all related utilities, gas, telephone, and water. Storage areas for the use of the Subcontractor shall be designated by Duke. No materials or equipment shall be stored except in areas approved by Duke.

3.13 Uncovering of Work. If any portion of the Work is covered contrary to the request of the Architect or Duke or the requirements of the Subcontract Documents, it shall be uncovered for observation and replaced at the Subcontractor’s expense. If any portion of the Work has been covered which the Architect or Duke has not specifically requested to observe before it was covered, either may direct the Work to be uncovered by the Subcontractor. If the uncovered Work is in accordance with the Subcontract Documents, the cost of uncovering and replacement shall, by Change Order, be reimbursed to the Subcontractor. If such Work is not in accordance with the Subcontract Documents, the cost shall be borne by the Subcontractor.

3.14 Correction of Work. The Subcontractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of Duke or separate contractors caused by the Subcontractor’s correction or removal of Work which is not in accordance with the requirements of the Subcontract Documents. If such testing, inspections or approvals reveal failure of the portions of the Work to comply with requirements established by the Subcontract Documents, all costs made necessary by such failure, including those of repeated procedures, shall be at the Subcontractor’s expense. If the Subcontractor fails to correct defective or non-conforming Work within two (2) days after receipt of written notice from Duke, Duke may make good the deficiencies and the cost shall be charged to the Subcontractor. If payments due the Subcontractor are not sufficient to cover the cost, the Subcontractor shall pay the difference to Duke.

3.15 Warranty. The Work shall be executed in accordance with the Subcontract Documents and in a workmanlike manner. In addition to the Subcontractor’s obligations to correct defective or non-conforming Work provided by law or as set forth in the Subcontract Documents, the Subcontractor warrants to the Tenant and Duke that materials and equipment furnished by the Subcontractor shall be of good quality and new unless otherwise required or permitted by the Subcontract Documents, the Work will be free from defects and will conform to the requirements of the Subcontract Documents, and the Work will comply with all applicable laws, building codes, rules and regulations. Substitutions not properly approved and authorized shall be considered non-conforming. If, within one year after the date of Substantial Completion of the Work, or by the terms of an special warranty required by the Subcontract Documents, any of the Work is found to be defective or non-conforming with the requirements of the Subcontract Documents, the Subcontractor shall correct it promptly after receipt of a written notice from Duke unless Duke has previously given the Subcontractor a written acceptance of such condition. The Subcontractor’s warranty excludes defects or damages caused by normal wear and tear during normal usage, use for a purpose for which the Project was not intended, improper or insufficient maintenance and abuse. The foregoing warranty is in addition to all special or extended warranties required by the Subcontract Documents or otherwise received from the Subcontractor or any material supplier or manufacturer.

3.15.1 The one year period for correction of defective or non-conforming Work does not constitute a limitation period with respect to the enforcement of the Subcontractor’s other obligations under the Subcontract Documents and the foregoing warranty shall not affect, limit or impair the Subcontractor’s responsibility for defects in the Work which do not appear within the applicable warranty period. The Subcontractor shall immediately correct and cure, at the Subcontractor’s expense, any defects which are reported to the Subcontractor.

3.15.2 The Subcontractor shall indemnify Duke against all claims, damages and expenses, including attorney’s fees, incurred by Duke as a result of the Subcontractor’s failure to abide by its warranty obligations.

3.15.3 Neither the acceptance of the Work nor any payment shall constitute a waiver of any claims against the Subcontractor for defective or non-conforming Work, whether latent or apparent, or otherwise act to release or discharge the Subcontractor from liability.

3.15.4 As a condition precedent to Final Payment, the Subcontractor shall furnish Duke, in form acceptable to Duke, all warranties, operating manuals, and a complete set of record drawings with all field changes noted and, if requested by Duke, a signed affidavit verifying that the Work has been completed in accordance with the Subcontract Documents.

3.16 Indemnification. To the fullest extent permitted by law, the Subcontractor shall defend and indemnify the Tenant, Duke and the Architect, their agents and employees, from and against all claims, damages,
and expenses, including but not limited to attorney’s fees, arising out of or resulting from the performance of the Work, but only to the extent caused by the failure to abide by this Agreement or by the negligent acts or omissions of the Subcontractor, its laborers, employees, subcontractors, suppliers and anyone for whose acts they may be liable. The indemnification obligation under this Section shall not be limited by the amount or type of damages, compensation or benefits payable by or for the Subcontractor under workers’ compensation acts, disability benefit acts or other employee benefit acts.

3.17 Bonds. If required by Duke and included in the Subcontract Sum, the Subcontractor shall furnish a performance bond and labor and material payment bond each in an amount equal to the Subcontract Sum and in such form as shall be required by Duke. The bonds shall be executed by a responsible surety licensed in the state in which the Project is located and approved by Duke. The bonds shall remain in effect for a period not less than one (1) year following the date of Substantial Completion or the Subcontractor’s warranty period, whichever is longer. The Subcontractor shall keep the surety informed of the progress of, and changes in, the Work, and requests for reduction or release or retainage or for Final Payment.

3.18 Duke Approvals. Duke shall render decisions and give approvals to the extent required by the Contract Documents. Before performing the Work, the Subcontractor shall inform Duke in writing of any information that is necessary for the Subcontractor’s performance of the Work. Duke’s approval or acceptance of, or payment for, any of the Work shall not be construed or operate as a waiver of any right under this Agreement or of any cause of action arising out of the performance of this Agreement.

ARTICLE 4
THE SUBCONTRACT TIME

4.1 Project Schedule. The timing of all Work and material and equipment deliveries shall conform to the Project Schedule. Duke shall have the right to modify the Project Schedule to vary the sequence or suspend, delay, or accelerate the commencement or execution of the Work. The Subcontractor shall transfer its laborers to such points as directed by Duke and execute such portions of the Work as may be required to enable other subcontractors to properly carry on their work without delay or interference.

4.2 Subcontractor’s Schedule. Within five (5) days of the execution of this Agreement, the Subcontractor shall prepare a detailed CPM schedule within the constraints of the Project Schedule, including the stated Substantial Completion date. The Subcontractor’s schedule shall include a detailed breakdown of the planned duration, start date and completion date for each activity and estimated dates for delivery of submittals, materials and equipment.

4.3 Acceleration. If the Subcontractor should (1) fail, refuse or neglect to supply a sufficient number of workers or deliver materials or equipment with such promptness as to prevent delay in the progress of the Work; (2) fail to commence and diligently prosecute the Work and proceed to the point to with the Subcontractor should have proceeded in accordance with the Project Schedule in order to achieve Substantial Completion in accordance with the Project Schedule; (3) fail to commence, prosecute, finish, deliver or install the different portions of the Work in accordance with the Project Schedule, or (4) fail in the performance of any of the material covenants of the Subcontract Documents, Duke shall have the right to direct the Subcontractor to prepare a written plan, for Duke’s approval, to accelerate the Work to comply with the Project Schedule, including, without limitation, providing additional labor, expediting deliveries of materials and equipment, performing overtime and/or resequencing the Work, without adjustment to the Subcontract Sum. Upon Duke’s approval of the acceleration plan, the Subcontractor shall accelerate the Work in accordance with the plan.

4.4 Delay Caused by Subcontractor. If the Work or the Project is delayed, disrupted or interfered with by any act or omission of the Subcontractor or any person or entity for whom the Subcontractor is responsible, the Subcontractor shall compensate Tenant and Duke for, and indemnify them against, all damages, losses and expenses, including attorney’s fees. If the Subcontract Documents or Tenant agreement provide for liquidated damages, and such damages are assessed, Duke may assess damages against the Subcontractor in proportion to the Subcontractor’s share of responsibility for the delay, not to exceed the amount assessed against Duke. This Section shall not limit the Subcontractor’s liability to Duke.

4.5 Delay to Subcontractor’s Work. If the Subcontractor is delayed at any time in the progress of the Work by any act or neglect of the Tenant or a separate contractor, or by changes order in the Work, labor disputes, fire, unreasonable acts or omissions of governmental authorities having jurisdiction over the Project, adverse weather conditions not reasonably anticipatable, unavoidable casualties, or other causes beyond the Subcontractor’s control, or any delay authorized by Duke, the Subcontract Time shall be extended by Change Order for the period of lost on
the critical path of the Project Schedule. The Subcontract Time shall not be extended due to inadequate construction forces, the failure of the Subcontractor to place orders for equipment or materials sufficiently in advance to assure timely delivery, and interruptions to or suspensions of the Work to enable other subcontractors to perform their work. Duke’s exercise of its rights under the Subcontract Documents, including but not limited to changes in the Work, regardless of the extent or number of such changes, shall not be construed as delay, disruption or interference with the Work.

4.5.1 Any claim for an extension of the Subcontract Time shall be made in writing to Duke no later than ten (10) days after the commencement of the occurrence giving rise to the claim; otherwise it shall be waived. The Subcontractor shall provide Duke with an estimate of the probable effect of such occurrence on the progress of the Work.

4.5.2 The Subcontractor may receive an increase in the Subcontract Sum, on the basis of delay, but only if an increase is expressly agreed to by Duke, in its sole discretion, and only for and to the extent of an increase in the Subcontractor’s General Conditions caused by a delay to the critical path of the Project Schedule and caused by Duke, a separate contractor, or a suspension of the Work by Duke or the Tenant, but only if the Subcontractor timely submits a written claim to Duke in accordance with applicable provisions of this Agreement. Otherwise, the Subcontractor’s sole remedy for any delay in the commencement, prosecution, or completion of the Work, disruption to or interference with the performance of the Work, loss of productivity, or other similar claims, whether or not foreseeable, shall be an increase in the Contract Time unless caused by acts constituting intentional interference by Duke or the Tenant with the Subcontractor’s performance of the Work where such acts continue after the Subcontractor’s written notice to Duke of such interference. Duke’s exercise of its rights to make changes in the Work, to suspend the Work or to require the correction of damaged, defective or non-conforming Work shall not under any circumstances be construed as intentional interference by Duke. In no event shall the Subcontractor be entitled to any compensation or the recovery of any damages in connection with any such claims, including consequential or incidental damages, lost opportunity costs, impact damages, or other similar remuneration. If the Subcontractor submits a progress report indicating, or the Subcontractor otherwise expresses an intention to achieve, completion of the Work prior to any completion date required by this Agreement or expiration of the Subcontract Time, no liability of Duke to the Subcontractor for any failure of the Subcontractor to so complete the Work shall be created, implied or permitted.

4.6 Work Suspension. Duke may suspend the Work upon two (2) days’ written notice to the Subcontractor. The Subcontract shall resume the Work as directed by Duke. If the Project is resumed after being suspended for more than ninety (90) days, the Subcontract Sum shall be equitably adjusted.

ARTICLE 5
PAYMENTS AND COMPLETION

5.1 Schedule of Values. Before the first Application for Payment, the Subcontractor shall submit to Duke a schedule of values and a complete billing breakdown on AIA Form G-703, or similar form provided by Duke, prepared in such form and supported by such data as Duke may require. If approved by Duke, these documents shall be used as the basis for the Subcontractor’s Applications for Payment. Each subsequent Application for Payment must be accompanied by an updated billing breakdown.

5.2 Applications for Payment. Based upon Applications for Payment submitted by the Subcontractor, Duke shall make progress payments to the Subcontractor as provided below and elsewhere in the Subcontract Documents. The period covered by each Application for Payment shall be one calendar month ending on the last day of the month. The Application for Payment must be prepared in duplicate on AIA Form G-702 and G-703, or similar form provided by Duke, and shall indicate the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment. Submission of an Application for Payment shall constitute a representation by the Subcontractor that (1) the Work covered by the Application for Payment has been completed in accordance with the Subcontract Documents, (2) the current payment shown is now due, (3) except as set forth in the Application for Payment, no additional amounts are due, (4) all amounts have been paid by the Subcontractor for Work for which previous payments have been received, (5) the Subcontractor has complied with and paid all amounts due under federal, state, and local tax laws, including social security, unemployment compensation and workers’ compensation laws, and (6) the remaining balance of the Subcontract Sum is sufficient to complete the Work free and clear of all liens and encumbrances.

5.3 Progress Payments. The amount of each progress payment shall be computed as follows: (1) Take that portion of the Subcontract Sum properly allocable to completed Work as determined by multiplying the percentage of completion of each portion of the Work by the share of the total Subcontract Sum allocated to that
portion of the Work in the schedule of values, less retainage, (2) add that portion of the Subcontract Sum properly allocable to materials and equipment delivered and suitably stored at the Project site by the Subcontractor for subsequent incorporation in the Project or, if approved in advance by Duke, suitably stored off the Project site at a location agreed upon in writing, less retainage, and subtract the aggregate of previous payments made to or on behalf of the Subcontractor.

5.4 Payments by Subcontractor. The Subcontractor shall pay for all labor, materials, equipment and services through the period covered by the previous payment received from Duke, and shall furnish satisfactory evidence, including (as a condition precedent to payment) releases and lien waivers on forms provided by Duke, to verify compliance with this requirement. If payment is made for materials or equipment stored off-site, title shall pass to Duke, but the Subcontractor shall remain fully liable for all such material and equipment until incorporated in the Project. Duke has the right to request written evidence from the Subcontractor that the Subcontractor has properly paid sub-subcontractors and material and equipment suppliers amounts paid by Duke to the Subcontractor. If the Subcontractor fails to furnish such evidence within seven (7) days, Duke shall have the right to contact the sub-subcontractors to ascertain whether they have been properly paid. Duke shall have no obligation to pay or to see to the payment of money to sub-subcontractors, except as may otherwise be required by law. If any payment claim or lien is made or filed with or against Duke, the Tenant or the Project, the Subcontractor shall, within twenty (20) days of the filing of the lien or submission of the claim, satisfy, discharge or bond-off the claim or lien, cause the Tenant and Duke to be dismissed from any action which may be brought in connection with a claim or lien, and compensate the Tenant and Duke for and indemnify them against any and all losses, damages, and expenses, including attorney's fees, sustained or incurred by them.

5.5 Payment Withholding. Duke may withhold payment from the Subcontractor, in whole or in part, to such extent as may be necessary, in Duke's opinion, to protect the Tenant or Duke from loss, including attorney's fees and damages, because of:

.1 defective or non-conforming Work;
.2 third party liens or claims filed or evidence indicating the probable filing of liens or claims;
.3 failure of the Subcontractor to make payments to its laborers, employees, subcontractors, material suppliers or equipment lessors;
.4 damage to the Tenant, Duke, another subcontractor or a separate contractor;
.5 evidence that the Work will not be completed for the unpaid balance of the Subcontract Sum;
.6 evidence that the Work will not be completed within the Subcontract Time; and
.7 failure of the Subcontractor to comply with the safety requirements of this Agreement or to carry out the Work in accordance with the Contract Documents.

When the above reasons for withholding payment are removed, payment will be made for amounts previously withheld with the next Application for Payment that includes such amounts. Duke may, at its sole option, issue joint checks to the Subcontractor and to any sub-subcontractor and material or equipment suppliers, and Duke may, but is not obligated to, make direct payment on behalf of the Subcontractor to any sub-subcontractor and material or equipment suppliers to whom the Subcontractor failed to make payment for Work properly performed or material or equipment suitably delivered, and charge such payments against the Subcontract Sum.

5.6 Substantial Completion. When Duke considers the Work, or a designated portion thereof, to be Substantially Complete, the Subcontractor shall, with its next Application for Payment, request payment for the unpaid balance of the Subcontract Sum, less sums necessary, in Duke's opinion, to cover items to be completed or corrected by the Subcontractor and as otherwise permitted by Section 5.5. Duke shall prepare for the Subcontractor a list of items to be completed or corrected. The failure to include an item on the list shall not act to waive the rights of Duke or otherwise alter the responsibility of the Subcontractor to complete the Work in accordance with the Subcontract Documents.

5.7 Final Payment. Final payment, constituting the entire unpaid balance of the Subcontract Sum, shall be made to the Subcontractor within seven (7) days after:
.1 The Work has been fully completed in strict accordance with the Subcontract Documents;

.2 The Subcontractor has furnished (1) a general release of all liens and claims and a final lien waiver on forms acceptable to Duke, (2) the number of copies of record drawings required by the Subcontract Documents, and (3) all Operational/Instructional/Maintenance Manuals, warranties, and any other close-out documents required by the Subcontract Documents; and

.3 Duke has received payment from the Tenant.

As a condition precedent to the issuance of final payment, the Subcontractor, if required, shall submit evidence satisfactory to Duke that all indebtedness relating to the Work has been satisfied.

5.8 Interest. Unless otherwise expressly provided in the Subcontract Documents, payments due and unpaid under the Subcontract Documents shall bear no interest. Unless otherwise provided in the Subcontract Documents, payments due to the Subcontractor shall bear no interest. If interest is expressly provided for in the Subcontract Documents or required by applicable law, then such interest shall apply only with respect to liquidated and non-disputed payments, and shall only accrue from and after the tenth (10th) day following Duke’s receipt of a notice containing an express statement by the Subcontractor of its intention to assess interest. In the event Duke is entitled to withhold payment under the Subcontract Documents, or in the event of a good faith dispute between Duke and the Subcontractor, no interest shall accrue.

ARTICLE 6
PROTECTION OF PERSONS AND PROPERTY

6.1 Subcontractor Responsibility. The Subcontractor shall take all reasonable safety precautions with respect to the Project. In addition, the Subcontractor shall comply with the safety requirements of Division 1 of the Specifications, other safety requirements and regulations set forth elsewhere in the Subcontract Documents, and all applicable laws, ordinances, rules, regulations and orders of public authorities having jurisdiction over the Project. Before commencing Work, the Subcontractor shall designate a competent person(s) who shall be responsible for the implementation of the safety requirements of this Agreement, and who shall cooperate with the other subcontractors to the extent necessary to insure Project safety. A safety representative employed by Duke or an insurer may, from time to time, conduct safety inspections and submit safety findings. The Subcontractor shall, at its expense, implement any abatement procedures recommended by such safety representative.

6.2 Hazardous Substances. A “Hazardous Substance” is any substance or material identified as hazardous under any federal, state or local law or regulation, or any other substance or material that may be considered hazardous or otherwise subject to statutory or regulatory requirement governing handling, disposal and/or cleanup. Hazardous substances shall not be used without the prior written consent of Duke, and the Subcontractor shall be responsible for Hazardous Substances brought to the site by the Subcontractor unless such Hazardous Substances were expressly required by the Subcontract Documents. Neither Duke nor the Tenant shall be responsible for Hazardous Substances brought to the Project site by the Subcontractor or its sub-subcontractors. The Subcontractor shall defend, indemnify and hold harmless Duke and the Tenant from and against any and all direct claims, damages, losses, costs and expenses, including but not limited to attorneys’ fees, arising out of or relating to the use or storage of Hazardous Substance for the execution of the Work.

ARTICLE 7
INSURANCE

7.1 Liability and Employee Insurance. The Subcontractor shall purchase and maintain insurance for protection against all claims that arise out of or result from the Subcontractor’s Work and operations, whether performed by the Subcontractor or anyone for whose acts the Subcontractor may be liable, including the following types with the following limits:

- **Worker’s Compensation.** Required
- **Employer’s Liability covering all employees, volunteers, temporary employees and leased workers.** $1,000,000 each accident, $1,000,000 disease each employee, and $1,000,000 disease policy limits.
- **Commercial General Liability (form CG 00 01 or its equivalent), for bodily injury and property damage.** $3,000,000 per occurrence
including personal injury, premises/operations,  
broad form property damage, independent  
contractors, products and completed operations  
(with limits of $3,000,000 and coverage for a  
minimum period of two (2) years after Substantial  
Completion), including (1) explosion, collapse,  
shoring, grading and or underground property  
damage hazards, (2) damages or injury arising from  
defective Work, including costs to repair or replace  
damaged Work, and (3) contractual liability coverage  
(the Commercial General Liability insurance may  
be arranged under a single policy for the full limits  
required or by a combination of underlying policies  
with the balance provided by an Excess or Umbrella  
Liability Policy).

Commercial Automobile Liability, including owned,  
non-owned and hired car coverages. $1,000,000 combined single limit for bodily injury  
and property damage.

Professional Liability, with a retroactive date earlier  
of contract execution or commencement of work  
inclusive of failure to complete drawings, schedules  
and shop drawings on time. For all engineers and other design professionals  
responsible for the civil, structural, mechanical, fire  
protection, electrical and plumbing design: $2,000,000 each claim, $2,000,000 annual  
aggregate limit with not more than a $100,000  
deductible. For all other design professionals  
(including consultants): $1,000,000 each claim, $1,000,000 annual aggregate limit with not more  
than a $100,000 deductible.

7.1.1 Insurers and Policies. The insurance shall be procured from companies licensed to do  
do business in the state in which the Project is located. The insurers must have a minimum AM Best rating of AVIII.  
All insurance procured or maintained by the Subcontractor shall be primary. Any insurance maintained by Duke or  
the Tenant shall be considered excess and non-contributory. Coverage shall be on an occurrence basis, except for  
professional liability which shall be on a claims made basis. Except with respect to bodily injury and property damage  
included within the products and completed operations hazards, the aggregate limit shall apply per Project to the  
Subcontractor’s Work. The Subcontractor waives all rights against Duke, the Tenant and separate contractors for  
damages covered by the Subcontractor’s insurance. The Subcontractor shall permit Duke to examine the actual  
policies upon request.

7.1.2 Evidence of Insurance. Certificates of Insurance acceptable to Duke shall be submitted to  
Duke prior to commencement of the Work, and thereafter upon renewal or replacement of each required policy of  
insurance. The Certificates shall contain a provision that coverage shall not be canceled until at least thirty (30) days'  
prior written notice has been given to Duke. The Certificates for the commercial general liability, automobile liability  
and any umbrella or excess liability policies shall name Duke, the Tenant and the Tenant’s lenders as additional  
insureds, and as additional insureds for claims caused in whole or in part by the Subcontractor’s negligent acts or  
omissions during the Subcontractor’s completed operations. The additional insured endorsement shall state that  
coverage is afforded the additional insureds as primary and non-contributory. Subcontractor agrees to waive any and  
all rights of subrogation against the additional insureds. Duke shall withhold all payments to the Subcontractor until  
such Certificates of Insurance are received by Duke. Duke shall have the right, but not the obligation, to prohibit the  
Subcontractor from entering the Project site until such Certificates have been received and approved by Duke. The  
failure of Duke to demand such Certificates or to identify a deficiency in the evidence of insurance provided shall not  
be construed as a waiver of the Subcontractor’s obligation to maintain the insurance. If the Subcontractor fails to  
maintain any required insurance, the Subcontractor shall be in default and Duke shall have the right, but not the  
obligation, to purchase the insurance at the Subcontractor’s expense, stop the Work, or terminate this Agreement.

7.1.3 Professional Liability Insurance. The Subcontractor shall deliver to Duke a Certificate of  
Insurance deleting any design-build or similar exclusions that could compromise coverage because of the design-  
buid delivery of the Project. The policy shall have a retroactive date earlier of contract execution or commencement  
of work. The policy shall contain a provision that coverage will not be canceled or not renewed without at least thirty  
(30) days prior written notice to Duke. This policy must remain continuously in force for a period of two (2) years after  
Substantial Completion. In the event of termination of this coverage, the Subcontractor must provide evidence of
either a twenty-four (24) month extended reporting period endorsement, or a replacement policy with a retroactive
date earlier of contract execution or commencement of work. The Subcontractor shall assure that all consultants or
other design professionals engaged or employed by the Subcontractor carry and maintain similar insurance with
reasonably prudent limits and coverages in light of the services to be rendered.

7.1.4 **Sub-subcontractors.** The Subcontractor shall cause its sub-subcontractors to procure
insurance satisfying the requirements of this Article and naming Duke, the Tenant and the Tenant's lender as
additional insureds under their commercial general liability, automobile liability, and any umbrella or excess liability
policies, as provided in Section 7.1.2 and all such insurance shall be on a primary basis. All insurance maintained by
Duke shall be considered excess.

7.2 **Property Insurance.** If the Subcontractor makes a claim covered by the Builder's Risk or property
insurance policy maintained in connection with the Project, the Subcontractor shall be responsible for, and shall
permit the proceeds of its claim to be reduced by, the amount of the deductible required under the Builder's Risk or
property insurance policy irrespective of the cause or nature of the occurrence giving rise to the claim.

7.2.1 The Builder’s Risk property insurance policy shall not include coverage for any tools,
apparatus, machinery, scaffolding, hoists, forms, staging, shoring, equipment, materials and supplies that are not
incorporated into the completed construction, and the Subcontractor shall make its own arrangements for any
insurance it may require to protect such items. The Subcontractor shall provide property and equipment insurance
for the full value of all materials and equipment stored off-site or in transit, unless Duke issues a specific written
waiver of this requirement. The Subcontractor waives all claims and all rights of subrogation against Duke and the
Owner for loss of, or damage to, the Subcontractor's tools, equipment, materials, and supplies.

7.2.2 The Contractor and Subcontractor waive all rights against (1) each other and any of their
subcontractors, agents and employees, and (2) the Tenant, separate contractors, and any of their subcontractors,
agents and employees for damages caused by fire or other causes of loss to the extent covered by Builder's Risk or
other property insurance applicable to the Work, except such rights as they may have to proceeds of such insurance.
The Subcontractor shall require similar waivers of its subcontractors, agents and employees.

7.3 **Recommendations of Insurers.** The Subcontractor and Duke shall cooperate and comply with all
reasonable requirements and recommendations of the insurers and insurance brokers issuing or arranging for
issuance of the insurance policies required by this Article, including requirements and recommendations relating to
safety, insurance program administration, claims reporting and investigation, and audit procedures.

**ARTICLE 8**

**CHANGES IN THE WORK**

8.1 **Modifications.** Duke may make changes in the Work by issuing a Modification. A "Modification" is
a Change Order or other written directive to the Subcontractor signed and issued by Duke. All changes in the Work
shall be performed under the applicable conditions of the Subcontract Documents.

8.2 **Change Orders.** The Subcontract Sum and the Subcontract Time shall be changed only by
Change Order. A Change Order signed by Duke and the Subcontractor conclusively establishes the Subcontractor's
agreement therewith, including the adjustment in the Subcontract Sum and the Subcontract Time. The Subcontractor
shall submit a properly itemized Change Order Proposal covering additional or deleted Work. The proposal shall be
itemized for the various components of the Work and segregated by labor, material, and equipment in a detailed
format satisfactory to Duke and advise Duke of the anticipated impact on the Subcontract
Time. Details to be submitted include detailed line item estimates showing detailed materials quantity take-offs,
material prices by item and related labor hour pricing information and extensions (by line item). The Subcontractor’s
Change Order Proposal shall be submitted within seven (7) days of Duke’s request, unless Duke extends such period
of time due to the circumstances involved. The Subcontractor’s failure to so advise Duke within the specified time
period shall constitute a waiver of the Subcontractor’s right to an increase in the Subcontract Time or the Subcontract
Sum.

8.3 **Pricing.** The adjustment to the Subcontract Sum resulting from a Modification shall be determined
by (1) a lump sum amount agreed upon, itemized and supported by sufficient substantiating data to permit evaluation,
(2) unit prices stated in the Subcontract Documents or subsequently agreed upon, or (3) costs agreed upon and a
mutually acceptable fixed or percentage fee. If none of these methods are used, the Subcontractor shall promptly
proceed with the Modification and the adjustment to the Subcontract Sum shall be determined by Duke on the basis of the reasonable costs and savings attributable to the Modification.

8.3.1 The Subcontractor shall keep and present, in such form as Duke may prescribe, an itemized accounting together with appropriate supporting data. "Costs" shall be limited to the reasonable cost of materials (including sales tax and delivery), labor (including social security, unemployment insurance, and fringe benefits required by agreement or custom), workers' compensation insurance, bond premiums, the rental value of equipment and machinery, and additional costs of supervision and field office personnel directly attributable to the Modification.

8.3.2 If a Modification is performed on a “Time and Material” basis, the Subcontractor shall submit to Duke timesheets and work orders at the end of each day worked to verify charges for that day. Otherwise, Duke may reject payment for the “Time and Material” work.

8.4 Buy-Outs. The Subcontractor shall not engage in the practice of inflating Change Order Proposals (generally known as buyouts) by submitting prices to Duke that are higher than the Subcontractor's actual known costs. Each component of a proposed Change Order affecting the Subcontract Sum shall be supported by an underlying cost element and documentation evidencing actual costs. Where a price has been obtained that is lower than what was submitted in an original proposed Change Order (for whatever reason or through whatever means), the Subcontractor shall pass along such savings to Duke. If the lower price is obtained prior to the execution of a Change Order, such savings shall be incorporated into the proposed Change Order prior to execution. If a Change Order has already been executed, a deductive Change Order shall be issued to Duke for the difference.

8.5 Concealed Conditions. The Subcontractor represents to Duke that the Subcontractor (1) is experienced and skilled in the construction of structures and improvements of the type described in the Subcontract Documents, and (2) has, by careful examination, satisfied itself as to and has taken into account the nature, location and character of the Project site, including, without limitation, the surface and subsurface (by review of available reports and information), condition of the Project site and all structures and obstructions thereon, both natural and man-made, and all surface and subsurface (to the extent reasonably identified by review of available reports and information), water conditions of the Project site and surrounding area and the nature, location and character of the general area in which the Project site is located. Should concealed, unknown subsurface conditions be encountered in the performance of the Work and such conditions either (1) differ materially from the conditions indicated by the Subcontract Documents and should not have been known to the Subcontractor given the foregoing representations by the Subcontractor, or (2) are of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in Work given the foregoing representation by the Subcontractor, the Subcontract Sum shall be equitably adjusted by Change Order upon written claim by the Subcontractor, if made within ten (10) days after the first observance of the conditions. However, surveys and other documents describing the physical characteristics, legal limitations or utility locations for the Project site that are not identified as Subcontract Documents are for informational purposes only and Duke shall not be liable for inaccuracies or omissions therein, nor shall any inaccuracies or omissions in such items relieve the Subcontractor of its responsibility to perform the Work in accordance with the Subcontract Documents.

8.6 Audits. Duke shall be permitted to review, audit and copy the Subcontractor’s records relating to Change Order Proposals, Change Orders and changed work (whether based on lump sum, unit prices, or costs) upon reasonable notice and during normal business working hours throughout the term of this Agreement and for a period of three (3) years after final payment or longer if required by law. “Records” shall include any and all information, materials and data of every kind and character (hard copy as well as computer readable data) that may, in Duke’s judgment, have any bearing on or pertain to the pricing of changed, added or deleted Work and the accuracy of the Subcontractor’s representations regarding pricing and claims information submitted by the Subcontractor. If an audit or examination in accordance with this Section discloses overcharges by the Subcontractor, the cost of Duke’s audit shall be immediately reimbursed by the Subcontractor in addition to the overcharges.

8.7 Forms. The form and content of all reoccurring documents (i.e. Change Orders, Field Orders, reports and timesheets) may be designated by Duke, and the Subcontractor agrees to use such forms.

ARTICLE 9
DISPUTE RESOLUTION

9.1 Claims. The Subcontractor shall make all claims for an increase in the Subcontract Sum or the Subcontract Time in accordance with the Subcontract Documents and in strict compliance with the procedures provided below. If the Subcontractor claims that it is entitled to additional sums or time, for any reason whatsoever,
the Subcontractor shall give Duke written notice of the claim within ten (10) days after the occurrence giving rise to the claim or within ten (10) days after the Subcontractor first recognizes the condition giving rise to the claim, whichever is later. The notice of the claim shall set forth the circumstances giving rise to the claim, and to the extent reasonably available, facts, documents, backup data and other information supporting the claim and the relief sought. Failure by the Subcontractor to provide written notice of the claim shall result in a waiver of the claim. Within thirty (30) days after providing written notice of a claim, the Subcontractor shall submit complete support for the claim including without limitation documents, backup data and other information supporting the claim, the relief sought, and those persons with knowledge of the claim. No additional sums shall be paid to the Subcontractor, and no additional time shall be granted or recognized, unless the Subcontractor has received a written Change Order signed by Duke's Project Manager. VERBAL CHANGES OR EXTRAS SHALL NOT BE VALID OR ENFORCEABLE.

9.2 Disputes Involving the Tenant. A claim which will affect or become part of a claim which Duke will or may make against the Tenant shall be submitted by the Subcontractor in sufficient time to permit Duke to make the claim against the Tenant in a timely manner. Failure of the Subcontractor to make such timely claim shall bind the Subcontractor to the same consequences as those to which Duke is bound. If Duke asserts or defends a claim against the Tenant which relates to the Work of the Subcontractor, the Subcontractor shall make available to Duke all requested documentation and information relating to that portion of the claim and the Subcontractor shall be bound by the outcome of the dispute resolution procedure between the Tenant and Duke. The Subcontractor shall reimburse Duke for all costs and expenses, including attorney's fees, incurred by Duke in defending a claim by, or prosecuting a claim against, the Tenant or any other party if such claim relates to or arises from the Subcontractor's Work. Duke shall pay the Subcontractor a proportionate share of any recovery received from the Tenant on the basis of the ratio of the Subcontractor's claims to other claims that are asserted, less Duke's costs, expenses and attorney's fees. Likewise, the Subcontractor shall indemnify Duke against, and reimburse Duke for, a proportionate share of any recovery by the Tenant involving the Subcontractor's Work, plus Duke's costs, expenses and attorney's fees.

9.3 Disputes Not Involving the Tenant.

9.3.1 If a dispute arises out of or relates to the Project, the Work, the Subcontract Documents or this Agreement or any breach thereof, the parties shall endeavor to settle the dispute first through direct discussions between the parties' representatives who have the authority to settle the dispute. If the parties' representatives are not able to promptly settle the dispute, the executives of the parties, who shall have the authority to settle the dispute, shall meet within twenty-one (21) days after the dispute first arises. If the dispute is not settled within seven (7) days from the referral of the dispute to the parties' executives, the parties shall submit the dispute to mediation in accordance with Section 9.3.2.

9.3.2 If the dispute cannot be settled pursuant to Section 9.3.1, the parties shall endeavor to settle the dispute by mediation under the current Construction Industry Mediation Rules of the American Arbitration Association before recourse to arbitration. Once a party files a request for mediation with the other party and with the American Arbitration Association, the parties agree to conclude such mediation within sixty (60) days of filing of the request. Either party may terminate the mediation at any time after the first session, but the decision to terminate shall be delivered in person by the party's representative to the other party's representative.

9.3.3 If the dispute cannot be settled pursuant to Sections 9.3.1 and 9.3.2, all controversies, claims, disputes and other matters in question arising out of or relating to the Project, the Work, the Subcontract Documents, or this Agreement or any breach thereof shall be settled by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then in effect. Any arbitration proceeding initiated under the terms of this Agreement may, at the request of either party, be joined or consolidated with other arbitration proceedings involving additional parties if the controversies, claims, disputes or other matters in question arise out of or relate to the Project, the Work, the Subcontract Documents or this Agreement or any breach thereof. Notice of demand for arbitration shall be filed in writing with the other party and with the American Arbitration Association. The demand shall be made within a reasonable time after the controversy, claim, dispute or other matter in question has arisen. In no event shall the demand for arbitration be made after the date when the applicable statute of limitations would bar the institution of a legal or equitable proceeding based on such controversy, claim, dispute or other matter in question. The party filing a notice of demand for arbitration must assert in the demand all claims, disputes and other matters then known to that party on which arbitration is permitted to be demanded. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the claim, dispute or other matter in question. The award rendered by arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction.
9.4 **Limitations Period.** The Subcontractor shall commence all claims and causes of action, whether in contract, tort, or otherwise, against the other arising out of or related to this Agreement within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work.

9.5 **Waiver of Consequential Damages.** The Subcontractor waives all claims against Duke and the Tenant for consequential damages arising out of or relating to this Agreement. This mutual waiver includes but is not limited to damages incurred by the Subcontractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work. This mutual waiver is applicable, without limitation, to all consequential damages due to the termination of this Agreement, except as provided in Section 11.5.

9.6 **Continued Performance.** The Subcontractor shall continue performance of the Work, if directed by Duke, in the event of a dispute; the existence of a dispute shall not justify delay or suspension of the Work by the Subcontractor. Failure to so proceed shall constitute a material breach of this Agreement by the Subcontractor, regardless of the ultimate outcome of the dispute.

**ARTICLE 10**

**TERMINATION**

10.1 **Default.** If, in the opinion of Duke, Subcontractor fails to provide a sufficient number of properly skilled laborers or adequately supervise the Work, or fails in any material respect to prosecute the Work according to Project Schedule, cause delay to, disruption of, or interference with the work of Duke or any other subcontractor, or fails in any material respect to comply with any other provisions of the Subcontract Documents, makes a general assignment for the benefit of creditors, has a receiver appointed, becomes insolvent or files for protection under the Bankruptcy Code (collectively, "Default"), Duke may, after forty-eight (48) hours written notice to the Subcontractor:

1. take such steps to correct, cure or overcome the Default as Duke deems expedient, and charge all expenses, losses, costs and damages, including attorney's fees, to the Subcontractor; or

2. terminate this Agreement.

Upon Default, Duke may exclude the Subcontractor from the site and take possession of all materials, equipment, tools and construction equipment and machinery thereon owned or leased by the Subcontractor. If Duke terminates this Agreement, Duke may finish the Subcontractor's Work by whatever method Duke deems expedient. If the unpaid balance of the Subcontract Sum exceeds the expense of finishing the Subcontractor's Work and other losses, costs and damages incurred by Duke, including attorney's fees, such excess shall be paid to the Subcontractor. If such expense and other losses, costs and damages, including attorney's fees, exceed the unpaid balance of the Subcontract Sum, the Subcontractor shall pay the difference to Duke.

10.2 **For Convenience.** Duke may, at any time, terminate this Agreement for its convenience. Upon receipt of written notice of termination, the Subcontractor shall cease operations as directed by Duke in the notice, take actions necessary, or as Duke may direct, for the protection and preservation of the Work, and terminate all existing subcontracts and purchase orders. Provided the Subcontractor is not in Default, the Subcontractor shall receive, as full compensation, its actual, necessary, and reasonable costs of performing the Work to date of termination, plus a reasonable markup for overhead and profit on Work performed. The Subcontractor shall make its records available for Duke's review. In the event any termination of the Subcontractor for Default is later determined to have been improper, the termination shall automatically convert to a termination for convenience, and the Subcontractor shall be limited in its recovery strictly to the compensation provided for in this Paragraph.

**ARTICLE 11**

**MISCELLANEOUS PROVISIONS**

11.1 **Assignment.** Duke may assign this Agreement to the Tenant, subject to the prior rights of sureties, if any. In such event, the Tenant shall assume Duke's rights and obligations under this Agreement. The Subcontractor shall not assign this Agreement.

11.2 **Written Notice.** Written notice shall be deemed to have been duly served if delivered in person or sent by (1) registered or certified mail to the address shown on the first (title) page of this Agreement, (2) facsimile with confirmed receipt, or (3) electronic transmission with a hard-copy delivered within seven (7) days after the transmission.
11.3 No Third Party Beneficiary Rights. The Subcontract Documents shall confer no right, benefit or remedy, either intended or incidental, upon the Subcontractor or its sub-subcontractors, laborers, material suppliers or equipment lessors to enforce the Subcontract Documents against the Tenant or to make any claim or demand against the Tenant.

11.4 Representation. The Subcontractor represents and warrants the following to Duke (in addition to any other representations and warranties contained in the Subcontract Documents) as a material inducement to Duke to execute this Agreement, which representations and warranties shall survive the execution of the Agreement, any termination of the Agreement and the final completion of the Work:

.1 The Subcontractor and, to the best of its knowledge, its sub-subcontractors, are financially solvent, able to pay all debts as they mature and are possessed of sufficient working capital to complete the Work and perform all obligations hereunder;

.2 the Subcontractor is able to furnish the tools, materials, supplies, equipment and labor required to complete the Work and perform its obligations hereunder;

.3 the Subcontractor is authorized to transact business in the State and locale of the Project and is properly licensed by all necessary authorities having jurisdiction over it, the Work and the Project;

.4 the Subcontractor’s execution of the Agreement is within its duly authorized powers; and

.5 the Subcontractor is a sophisticated contractor which possesses a high level of experience and expertise in the business administration, construction and superintendence of projects of the size, complexity and nature of the Project and will perform the Work with the care, skill and diligence of such a contractor.

11.5 OFAC Compliance. The Office of Foreign Assets Control (OFAC) prohibits US persons from entering into transactions with individuals, groups, and entities, such as terrorists, narcotics traffickers and those engaged in activities related to the proliferation of weapons of mass destruction, collectively referred to as Specially Designated Nationals (“SDN”). The Subcontractor warrants and represents that neither it nor any individual in a management position with the Subcontractor is named on the SDN list. If the name of the Subcontractor or any individual in a management position with the Subcontractor is discovered on the SDN list, published by OFAC, such discovery shall constitute a material breach of this Agreement. Duke shall promptly notify the Subcontractor, which shall have three (3) days in which to provide to Duke clear and convincing evidence that (a) neither the Subcontractor nor any individual in a management position with the Subcontractor is an SDN, (b) the transaction is authorized by OFAC, or (c) a statutory exemption exists that permits Duke to do business with the Subcontractor. Should the Subcontractor fail to do so, then Duke shall terminate this Agreement for cause without further notice or grace period.
SECTION 00900 - CONTRACTORS AND VENDORS RULES OF CONDUCT

PART I – GENERAL

1.1 CONTRACTORS AND VENDORS RULES OF CONDUCT

In an effort to have COMPLETE CUSTOMER SATISFACTION, we have prepared the following “Rules of Conduct.” Your personnel’s compliance with these rules is mandatory.

- Only authorized personnel shall be permitted on a Duke Realty project. Company identification or uniforms are required.
- Always check in at the front desk in occupied spaces or at the construction trailer on shell projects prior to entering construction sites.
- Conduct yourself as guests in Tenant Spaces as well as in the buildings. When dealing with Tenants, be courteous at all times. Keep all negative comments to yourself or discuss them with Duke Realty personnel away from the Tenant Space.
- Radios or audio equipment, other than communication equipment, are strictly prohibited on Duke Realty jobsites.
- Proper construction attire shall be required at all times. Hardhats shall be worn at all times or as directed by the Duke Realty Management. Shirts with 4” sleeves, long pants and work shoes are required. Tennis shoes shall not be permitted. Clothing shall be free of excessive rips, tears and offensive graphics or wording, or anything else deemed inappropriate by Duke Realty Management.
- Housekeeping is paramount. Remove all dirt and debris created by your activity. Project to be broom swept and trash removed on a daily basis or as directed by Duke Realty Management and as needed by each applicable trade.
- Special care shall be taken at all times to protect the furnishings and finishes of the Tenant Spaces. Dust, fumes and vapors controls shall be employed. Protect hallways and entries with temporary carpet runners.
- No Graffiti.
- Be neat, clean and QUIET while in or NEAR occupied spaces.
- Do not use Tenant Phones. The use of cell phones in client occupied spaces is limited to supervision only. Non-supervision must leave the occupied space when making and receiving calls as not to bother the tenants.
- The use of cell phones is prohibited when operating equipment or during the performance of hazardous tasks.
- Smoking and the use of smokeless tobacco are prohibited in occupied spaces or as deemed acceptable on shell projects.
- Loud and/or foul language as well as graffiti is strictly prohibited.
- Food and drink shall not be permitted in carpeted spaces or any other area deemed restricted by Duke Realty Management.
- Material storage and/or debris shall not be left in occupied or vacant spaces. Flammable/Combustible liquids shall not be stored inside a Duke Realty building.
- Exterior exits and entrances shall be maintained clear and unobstructed. Securing of the doors is the responsibility of the contractor and shall be locked at night. Lights shall also be turned off at night.
- Thermostats shall not be adjusted unless Duke Realty Construction Management has granted permission.
- No vehicles shall be brought or parked in the buildings, or are to be parked in parking spaces outside allotted for handicapped parking. Loading docks are for loading and unloading only. Parking shall not be permitted at the dock area to check on workers.
- Work that creates noxious odors shall not be performed in the buildings. Any floor sealing or other such odiferous work is to be coordinated with the Duke Realty Management to allow for proper advanced notification with the Tenants and the adjoining Spaces.
- Any work that will compromise the existing utilities shall be coordinated with the Duke Realty Management.
- Arrangements shall be made with Duke Realty Management if access is required to adjoining Tenant Spaces.
- Arrangements shall be made with Duke Realty Management if access is required after hours, on weekends or on holidays.
- The use of powder actuated tools or hammer drills is prohibited at occupied properties between the hours of 8:00 AM and 5:30 PM, or as directed by a Duke Realty Superintendent. Hearing and eye protection shall be worn when operating Powder Actuated Tools (PATs). Workers using PATs shall show proof of proper tool training.
- Only designated freight elevators that are properly protected shall be used by the contractors and vendors.
- Safe working practices shall be observed at all times. The safety of your employees, the buildings and the Tenants is considered to be paramount. All work shall be conducted and completed by the guidelines set forth by the Federal, Local and State Authorities. Compliance with the Duke Realty Safety Program for Construction is also required.
Fall protection shall be worn, observed or employed when working in articulating boom lifts, scissors lifts, ladders, scaffolding (>10’) and any other activity where workers are exposed to a fall exposure greater than 6 feet in height.

Any scaffold that is moved with a worker on the platform must have a guardrail around the entire work platform regardless of the height of the scaffold.

Any and all “Hot Work” (non electrical) shall comply with Duke Realty’s Hot Work Policies and have an appropriate fire extinguisher immediately accessible.

All electrical service shall be properly protected with a GFCI, including the use of extension cords on permanent power.

All Energized Electrical (HOT) Work shall first be discussed with Duke Realty Management before starting the work.

Eye protection shall be worn at all times when cutting, grinding, chipping, drilling or using powder actuated tools.

A face shield must be worn with eye protection when cutting metal with chop saws or when dry cutting concrete.

The use of aluminum step ladders is prohibited on Duke Realty projects. However, aluminum extension ladders are permitted.

Report all injuries, incidents, or near hits immediately to Duke Realty Management.

Non-compliance with the “Rules of Conduct” shall result in Disciplinary Procedures up to and including removal from the project.
SECTION 01010 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Subcontract and other Division 1 Specification Sections, apply to work of this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: The Project is identified by the heading on the Scope Of Work.
   1. Work may be performed under separate Design/Build Subcontracts as follows:
      a. Plumbing.
      b. Fire Protection Systems
      c. Mechanical, Heating, Ventilating and Air Conditioning
      d. Structural Steel
      e. Electrical

B. Contract Documents indicate the work of Contract, and related provisions of Project, which may include, but are not necessarily, limited to, the following:
   1. Existing site conditions and restrictions.
   2. Other work prior to work of Contract.
   3. Alterations and coordination with existing work.
   4. Other work to be performed concurrently by Owner.
   5. Other work to be performed concurrently by separate Contractors.
   6. Other work subsequent to work of Contract.
   7. Alternates, which are work of Contract, and alternates which are not work of Contract.
   8. Pre-negotiated material/equipment orders assigned as work of Contract.
   9. Pre-purchased material/equipment for Contract with purchase price included in Contract Sum.
   10. Pre-purchased subcontracts for contract, with subcontract amount included in Contract Sum.

C. Summary by Reference: Work of Contract can be summarized by reference in the Subcontract.

D. Coordination: The work of this Contract includes coordination with other work performed by separate contractors or subcontractors of Project, including assisting the Contractor in the preparation of general Coordination of drawings/diagrams/ schedules and control of site utilization; from the beginning of activity, through the project close-out and warranty periods.

E. Alterations: Where applicable, requirements of Contract Documents apply for alteration work in same manner as for new work.

1.3 CONTRACTS
A. Work shall be performed under separate subcontracts with the Contractor. The Contractor will manage the construction of the Project and may perform certain items of work with its own forces.

1.4 GENERAL REQUIREMENTS APPLICABLE TO ALL SUBCONTRACTORS

Section 01010 Summary of Work
Section 01041 Project Coordination
Section 01045 Safety
Section 01050 Field Engineering
Section 01200 Project Meetings
Section 01310 Construction Schedules
Section 01340 Shop Drawings, Product Data & Samples
Section 01350 Product Handling
Section 01410 Independent Testing Laboratory Services
Section 01501 Temporary Protection
Section 01505 Temporary Equipment & Work
Section 01510 Temporary Utilities & Service
Section 01518 Temporary Fire Protection
Section 01551 Access and Haul Roads, Parking and Traffic Regulations
Section 01563 Water Control
Section 01580 Project Identification and Signs
Section 01600 Material and Equipment
Section 01620 Storage and Protection
Section 01630 Substitutions and Product Options
Section 01700 Contract Closeout
Section 01710 Cleaning
Section 01714 Hazardous Communication Program
Section 01715 Hazardous Waste
Section 01720 Project Record Documents
Section 01730 Operating and Maintenance Data
Section 01740 Warranties and Bonds

1.5 SUBCONTRACTOR’S RESPONSIBILITIES

A. Except as specifically noted, provide and pay for:
   1. Labor, material and equipment.
   2. Tools construction equipment and machinery.
   4. Direct and indirect overhead.
   5. All insurance and taxes.
   6. Other facilities and services necessary for proper execution and completion of Work.

B. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities, which bear on performance of Work.

C. Follow all requirements of the Occupational Safety and Health Act.

D. Secure and pay for the following items, as necessary for proper execution and completion
of Work, and as applicable at the time of receipt of bids:
1. Permits
   a. Exception: Building Permit will be provided by the Contractor.
2. Fees
3. License
4. Bonds

E. Give required notices.

F. Promptly submit written notice to the Architect of any observed variance of contract Documents from legal requirements.

G. Provide for all surveying and layout for the execution of the Work.

H. Verify all grades, lines, levels and dimensions indicated on the Drawings and report any inconsistencies to the Contractor before commencing Work.

I. By submitting a bid, each Subcontractor represents that the Subcontractor will procure and provide sufficient laborers, Sub-subcontractors and materials to insure that its portion of the Work remains on or ahead of the Construction Schedule specified in Section 01310.

   1. The Contractor shall monitor each Subcontractor's progress and shall be sole judge as to whether or not the Subcontractor is maintaining the established schedule and performing Work of the required quality.

1.6 SUBCONTRACTOR'S USE OF PREMISES

A. Confine operations at site to areas permitted by:

   1. Law
   2. Ordinances
   3. Permits
   4. Contract Documents
   5. Owner
   6. Contractor

B. Do not unreasonably encumber site with materials or equipment.

C. Locate equipment and materials throughout the structure so as to not impose excessive loads to supporting walls, floors or structure.

D. Assume full responsibility for protection and safekeeping of materials and equipment stored on site.

E. Obtain and pay for use of additional storage or work areas needed for operation.

F. Parking: Workers shall park their vehicles in areas designated by the Contractor.

   1. No parking will be permitted on adjacent streets, fire lanes or access roads.
   2. It shall be the responsibility of the Subcontractor to provide parking for its workers, suppliers and sub-subcontractors in the event adequate parking space (as determined by the Contractor) is not available on site.

END OF SECTION
SECTION 01020 - ALLOWANCES

PART 1 - GENERAL

1.01 Related Documents

A. Drawings and general provisions of Subcontract and other Division 1 Specification Sections, apply to work of this Section.

1.02 Description of Work

A. Requirements for the work of allowances are shown and specified to extent established by date of Contract Documents; additional requirements shall be established by Change Order.

B. Types of allowances include the following:

1. Cash Allowances
2. Contingency Allowance
3. Unit Cost Allowance

1.03 Submittals

A. Proposals for Allowance Work:

1. Submit proposals for allowance work as directed, and in the manner specified for change orders.

2. Indicate quantities, unit costs, total purchase amounts, taxes, delivery charges and trade discounts.

   a. Where requested, furnish detailed breakdown of quantity survey.

B. At earliest possible date, advise Contractor and Architect/Engineer of date each final allowance selection must be completed.

1.04 Allowances

A. Material allowance - cost included in each allowance:

1. Net cost of materials, less any applicable trade discounts.

2. Delivery charges.

3. Applicable taxes.
B. Labor and material allowance - costs to be included are all of the above as described in item A, Plus:

1. Unloading and handling on the site including uncrating, storage and protection from the elements and damage.
2. Labor
3. Installation costs

C. Overhead and profit on the allowance work shall be included in the base Subcontract amount and not the allowance amount.

D. Adjustment of Costs: Whenever the cost is more than or less than the allowances, the Subcontract Sum shall be adjusted accordingly by Change Order.

E. The Contractor shall reserve the right to establish the final measure or count of work in place.

1.05 Selection of Product Under Allowances

A. Architect/Engineer's Responsibilities:

1. Consult with the Contractor in consideration of products and suppliers or installers.
2. Through the Contractor, make selection in consultation with the Owner. Obtain Contractor's and Owner's written decision, designating:

   a. Product, model and finish
   b. Accessories and attachments
   c. Supplier and installer as applicable
   d. Cost to Subcontractor, delivered to the site.
   e. Manufacturer's Warranties

B. Subcontractor's Responsibilities:

1. Assist Architect/Engineer, Contractor and Owner in determining qualified suppliers and installers.
2. Obtain proposals from suppliers and installers when requested by Contractor and Architect/Engineer.
3. Make appropriate recommendations for consideration of the Contractor and the Architect/Engineer.
4. Notify Contractor and Architect/Engineer promptly of:

   a. Any reasonable objections Subcontractor may have against any supplier, or party under consideration for installation.
b. Any effect on the construction Schedule anticipated by selections under consideration.

5. On notification of selection, execute purchase agreement with designated supplier.

6. Arrange for and process shop drawings, product data and samples, as required.

7. Make all arrangement for delivery.

8. Upon delivery, promptly inspect products for damage or defects.

9. Submit claims for transportation damage.

10. Install and finish products in compliance with requirements of referenced specification sections.

Part 2 - Products

A. Not applicable to this section.

Part 3 - Execution

3.01 Schedule of Allowance

A. Allowance amounts are included on Bid Proposal Form attached.

Unless specifically noted elsewhere in the Contract Documents, there are no allowances.

END OF SECTION
SECTION 01041- PROJECT COORDINATION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Contractor will coordinate the work of the several Subcontractors for the Project.

B. Each Subcontractor shall:
   1. Coordinate the work of its own employees and Sub-Subcontractors.
   2. Expedite its own work to ensure compliance with schedules.
   3. Coordinate its work with that of other Subcontractors, the Contractor and work by Owner.
   4. Comply with orders and instructions of the Contractor.
   5. Coordinate with

1.2 CONSTRUCTION ORGANIZATION AND START-UP

A. Contractor shall establish on-site lines of authority and communications:
   1. Schedule and conduct preconstruction meeting and progress meeting as specified in Section 01200: Project Meetings.
   2. Establish procedures for intra-project communications:
      a. Submittals
      b. Reports and records
      c. Recommendations
      d. Coordination drawings
      e. Schedules
      f. Resolutions of conflicts
   3. Interpret contract documents:
      a. Consult with Architect/Engineer to obtain interpretation.
      b. Assist in resolution of questions or conflicts, which may arise.
      c. Transmit written interpretations to Subcontractors, and to other concerned parties.
   4. Assist in obtaining permits and approval:
      a. Building permits and special permits required for permanent improvements or for temporary facilities.
      b. Verify that Subcontractors have obtained permits for inspections and for temporary facilities.
   5. Control the use of the site:
      a. Supervise field engineering and site layout.
      b. Allocate space for each Subcontractor’s use for field offices, sheds and work storage areas, subject to availability of space as determined by Contractor.
      c. Establish access, traffic and parking allocations and regulations.
      d. Monitor the use of the site during construction.

1.3 CONTRACTOR DUTIES

A. Construction Schedules
   1. Prepare a detailed schedule of basic operations for all Subcontractors.
   2. Monitor schedules as work progresses:
      a. Identify potential variances between scheduled and probable completion
dates for each phase.

b. Recommend to General Contractor adjustments in schedule to meet required completion dates.
c. Adjust schedules of all Subcontractors as required.
d. Document all changes in schedule; submit to General Contractor Architect/Engineer and all involved Subcontractors.

3. Observe work of each Subcontractor to monitor compliance with schedule.
a. Verify that labor and equipment are adequate for the work and the schedule.
b. Verify that product deliveries are adequate to maintain schedule.
c. Verify that product procurement schedules are adequate.

B. Process shop drawings, product data and samples:
1. Prior to submittal to Architect/Engineer, Contractor shall review for compliance with Contract Documents.
2. Return to Subcontractor, with comments and recommendations.

C. Review coordination drawings prepared by mechanical and electrical Subcontractors.
1. Submit to Architect/Engineer.
2. Reproduce and distribute approved copies to all concerned parties.

D. Inspection and Testing:
1. Inspect work to ensure that it is performed in accordance with requirements of Contract Documents.
2. Direct Subcontractor to stop work, which does not comply with requirements of Contract Documents.
   a. Administer special testing and inspections of suspect work.
   b. Reject work, which does not comply with requirements of Contract Documents.
3. Coordinate testing laboratory services:
   a. Verify that required laboratory personnel are present.
   b. Verify that tests are made in accordance with specified standards.
   c. Review test reports for compliance with specified criteria.
   d. Recommend and administer retesting.

E. Monitor the use of temporary facilities:
1. Review adequacy of services provided.
2. Check operation and maintenance.

F. Monitor Subcontractor's periodic cleaning; enforce compliance with specifications. Resolve any conflicts.

G. Arrange for delivery of Owner furnished products, if any.
1. Inspect for condition at delivery.
2. Turnover to appropriate Subcontractor, obtain receipt.

H. Changes and substitutions:
1. Recommend necessary or desirable changes to Contractor and to Architect/Engineer.
2. Review Subcontractor's request for changes and substitutions; submit recommendations to Contractor and to Architect/Engineer.
I. Provide cost control for the Project.
   1. Review and refine the approved estimate of construction cost periodically:
      a. Record actual costs and estimates for uncompleted work, if applicable.
      b. Incorporate approved changes as they occur. Develop cash flow reports and projections.
   2. Maintain cost accounting records for authorized work performed under:
      a. Unit costs
      b. Actual costs for labor and materials. Other basis requiring accounting records.
   3. Implement procedures for review and processing of Subcontractors' application for progress payments and for final payments.

1.4 CONTRACTOR CLOSE-OUT DUTIES

A. Mechanical and Electrical Equipment Start-Up:
   1. Coordinate the checkout of utilities, operational systems and equipment.
   2. Assist in initial start-up and testing.
   3. Record the dates of start of operation of systems and equipment.
   4. Submit to Subcontractor a written notice of the beginning of the warranty period for equipment put into service.

B. At completion of the work of each subcontract, conduct an inspection to ensure that:
   1. Specified cleaning has been accomplished
   2. Temporary facilities have been removed from the site.
   3. Excess materials have been removed from the site.

C. Substantial Completion:
   1. Conduct an inspection to confirm or supplement Subcontractor's list of work to be completed or corrected.
   3. Supervise the correction and completion of work as established in the Certificate of Substantial Completion.

D. When Owner occupies a portion of the Project prior to final completion, administer the established responsibility of the Contractor and the Owner.

E. Final Completion:
   1. When each Subcontractor determines that work is fully complete, conduct an inspection to verify completion of the Work.

F. Administration of Contract Close-out:
   1. Receive and review Subcontractor's final submittals.
   2. Transmit to Architect/Engineer with recommendations for action.

END OF SECTION
SECTION 01045 – CONSTRUCTION SAFETY

Part 1 – Safety Expectations

1.01 Not withstanding any other provisions of these Conditions, each subcontractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs. In no case shall Duke Construction or its employees and agents have either direct or indirect responsibility for the safety of the subcontractor’s workers.

1.02 All subcontractors performing work at Duke Construction project sites are expected to meet OSHA minimum requirements with the performance of all work activities.

1.03 All subcontractors are to follow any project specific safety rules, procedures and policies, including the requirements of the Duke Construction Safety Program, as determined by the Duke Construction Project Team.

1.04 All subcontractors are to report and provide written documentation for all incidents causing personal injury to a worker, property damage or any event that could have caused one of the above incidents to the Duke Construction Superintendent by the end of the work shift that the event occurred.

1.05 All subcontractors shall comply with the Duke Construction Drug and Alcohol Free Workplace Policy.

1.06 All subcontractors are to provide their workers with all required personal protective equipment, drinking water and first aid supplies.

1.07 Each subcontractor performing work on the project site must designate a Competent Person to address safety issues.

1.07.1 The Competent Person must be on site 100% of the time while work involving the subcontractor is taking place.

1.07.2 The Competent Person must be able to speak and understand English.

Part 2 – Site Specific Safety Plans

2.01 All subcontractors, upon request, shall develop and implement a Site Specific Safety Plan for this project.

2.02 Subcontractor’s Site Specific Safety Plans shall not be copies of the subcontractor’s safety program, but be specific for the work to be performed by the subcontractor on this site.

2.03 The subcontractor shall submit a Site Specific Safety Plan prior to beginning work on this project site.

2.04 Site Specific Safety Plans shall be submitted to Duke Construction with the executed contract.

2.05 The Site Specific Safety Plan shall include, but is not limited to the following:

2.05.1 The Site Specific Safety Plan is to be developed and submitted on the subcontractor’s letterhead.

2.05.2 The Site Specific Safety Plan shall include the project site address.

2.05.3 The Site Specific Safety Plan shall include a description of the work activities to be performed by the subcontractor.
2.05.4 The Site Specific Safety Plan shall include a discussion of the anticipated hazards that will be associated with the work activities to be performed by the subcontractor.

2.05.5 The Site Specific Safety Plan shall describe the control methods that will be utilized to reduce or eliminate the anticipated hazards associated with the work activities to be performed by the subcontractor.

2.05.6 The Site Specific Safety Plan shall identify the Competent Person by name.

2.05.7 An officer of the company or the company safety director shall sign the Site Specific Safety Plan.

2.05.8 The date that the program was developed and submitted shall be included on the Site Specific Safety Plan.

2.06 There may be instances where the duration of the project, changes in the working conditions, or changes in the scope of work dictate that updates to the Site Specific Safety Plan be made. The subcontractor will be responsible for making these changes upon request of the Duke Construction Project Team.

Part 3 – Subcontractor Safety Responsibilities

3.01 Comply with the Duke Safety Program, Policies and Procedures for the project site.

3.02 Report any personal injury accident, property damage or near hit incident to the Duke Project Superintendent immediately upon knowledge of the occurrence and provide written documentation of the incident by the end of the work shift that the incident occurred.

3.03 Comply with the Duke Drug and Alcohol Free Workplace policy.

3.04 Provide safety documentation (Site Specific Safety Plan, Tool Box Talks, Training Certifications, Job Site Safety Surveys and responses to Notice of Hazardous Condition Reports) to the Duke Project Superintendent immediately upon request.

3.05 Provide the Duke Construction Superintendent with copies of all Material Safety Data Sheets for products and substances to be used at this project site prior to beginning work activities.

3.06 Conduct at least weekly Tool Box Talks and Site Safety Surveys and provide documentation of these activities to the Duke Project Superintendent on a weekly basis.

3.07 Attend all progress and safety meetings conducted at the project site.

Part 4 – Drug and Alcohol Free Workplace Policy

4.01 Policy

4.01.1 Corporate Philosophy: Duke Realty Corporation (“Duke”) is committed to:

4.01.1.1 Providing a safe and productive work environment;

4.01.1.2 Maintaining a workplace free from alcohol and drug abuse and their effects;
4.01.1.3 Assuring that workers are not impaired in their ability to perform assigned duties in a safe, productive, and healthy manner; and
4.01.1.4 Prohibiting the unlawful manufacture, distribution, dispensing, possession, or use of controlled substances.

4.01.2 To meet these objectives, Duke must take a firm and positive stand against drug and alcohol abuse. Consequently, Duke will not tolerate or condone drug or alcohol abuse.

4.01.3 Treatment: Duke encourages associates to seek appropriate treatment if they are currently abusing drugs or alcohol, and Duke will take no adverse job action against associates who seek treatment before they are tested. However, in no case will Duke allow active drug or alcohol abuse.

4.01.4 Effective Date: This Drug and Alcohol Policy (“Policy”) shall become effective sixty days after the Date of Implementation, and notice of this Policy shall remain posted in an appropriate and conspicuous location on the premises of Duke. Copies of this Policy are available for inspection during regular business hours.

4.01.5 Intent: This Policy provides a uniform procedure for drug and alcohol testing designed to detect individuals having drugs or alcohol in their system. Nothing in this Policy shall be interpreted as creating a contract between Duke and any of its associates or otherwise altering the at-will status of that employment relationship.

4.01.6 Fair and Equitable Application: Duke is dedicated to assuring fair and equitable application of these Drug and Alcohol Testing procedures. Therefore, supervisors and managers are directed to use and apply all aspects of this Policy in an unbiased and impartial manner. Any supervisor or manager who knowingly disregards the requirements of this Policy, or who is found to deliberately misuse this Policy, shall be subject to disciplinary action up to and including termination.

4.02 Scope
4.02.1 Associates: This Policy applies to all Duke associates (“Associates”).
4.02.2 Others: Where indicated, this Policy also applies to subcontractors, trade contractors, vendors, suppliers and their employees and visitors when on a Duke job site or when performing work for or on behalf of Duke (“Covered Persons”).

4.03 Condition of Employment
4.03.1 For Associates, participation in this Policy is a condition of employment.

4.04 Substance Abuse Education
4.04.1 Duke will provide Associates with training on Duke policies and procedures regarding substance abuse, and how Associates who wish to obtain substance abuse treatment can do so.
4.04.2 Duke will provide supervisory personnel with training that explains the signs of substance abuse, documentation of substance abuse, and referral of Associates to treatment for substance abuse.

4.05 Prohibited Substances
4.05.1 Illegally-used Controlled Substances or Drugs: Any illegal drug or any substance identified in Schedules I through V of Section 202 of the Controlled Substances Act (21 U.S.C § 812) and regulations promulgated thereunder and any illegal drug or any substance identified under governing state or local law unless there is a valid, legal prescription. This prohibition includes:

4.05.1.1 Amphetamines/methamphetamines - speed, crank, crystal, preludin, bennies.
4.05.1.2 Barbiturates - amobarbital, butabarbital, phenobarbital, secobarbital, downers, red devils, barbs.
4.05.1.3 Benzodiazepines - xanax, ativan, valium.
4.05.1.4 Cocaine - coke, crack, flake, snow.
4.05.1.5 Opiates - codeine, heroin, morphine, hydromorphone, hydrocodone.
4.05.1.6 Phencyclidine - PCP, angel dust, wack.
4.05.1.7 Cannabinoids - marijuana, pot, hash.
4.05.1.8 Any other drug not approved for medical use by the U.S. Drug Enforcement Administration or the U.S. Food and Drug Administration.

4.05.2 Illegal use includes use of any illegal drug, misuse of legally prescribed drugs, use of illegally obtained prescription drugs, and use of prescription drugs without a valid prescription in the name of the Associate or Covered Person.

4.05.3 “Designer” drugs: “Designer” drugs are drugs produced by minor modifications in the chemical structure of an existing, scheduled drug that results in a new, unscheduled drug with pharmacological effects similar to an existing, scheduled drug. Examples are Ecstasy (MDMA), Crystal Meth (methamphetamine), China White, Rush, GHB (gamma hydroxybutyrate), and Ketamine.

4.05.4 Inhalants: The purposeful inhalation of chemical vapors to achieve an altered mental or physical state. Examples are volatile solvents such as thinner, gasoline, correction fluid, felt-tip markers, nail polish and remover, and glue; aerosols such as paint, deodorant, hair products, cooking products, and fabric protector; gases such as nitrous oxide; and nitrites such as cyclohexyl nitrite, amyl nitrite, and butyl nitrite.

4.05.5 Legal Drugs in Certain Circumstances: The use of any substance which carries a warning label indicating that mental functioning, motor skills, or judgment may be adversely affected must be reported to Duke supervisory personnel before performing safety-sensitive duties and medical advice must be sought.

4.05.6 Alcohol: Alcohol or any other substance such that alcohol is present in the body while performing work.

4.06 Prohibited Conduct

4.06.1 Manufacture, Trafficking, Possession, and Use: Associates and Covered Persons are prohibited from engaging in the manufacture, distribution, dispensing, possession or use of Prohibited Substances. Law
enforcement may be notified, as appropriate, where Prohibited Conduct is suspected.

4.06.2 Under the Influence: All Associates and Covered Persons reasonably suspected of being intoxicated, impaired, under the influence of Prohibited Substances, or not fit for duty shall be removed from the Duke job site pending an investigation and verification of condition by testing. The term "job site" as used in this Policy shall mean the location at which Associate or Covered Person is working for or on behalf of Duke.

4.06.3 Alcohol Use: No Associate or Covered Person should report to duty or remain on duty when that person’s ability to perform is adversely affected or when that person’s breath alcohol concentration is 0.02 or greater. No Associate or Covered Person shall use alcohol while on duty. Associates who violate this provision will be subject to disciplinary action; other Covered Persons will be made to leave the Duke job site.

4.07 Types of Drug and Alcohol Testing

4.07.1 Post-Accident Testing: A drug and alcohol test will be performed on any Associate or Covered Person who is involved in any accident resulting in vehicle or property damage, in loss of life, in an injury requiring medical attention, or in an injury required to be reported under applicable Occupational Safety and Health statutes and regulations (other than injuries resulting from insect, reptile or spider stings or bites and rashes resulting from exposure to poison ivy, poison oak, and other similar plants) or in any near accident that could have resulted in vehicle or property damage, in loss of life, or in an injury. Post-accident drug and alcohol tests must be conducted as soon as possible after the accident or near accident. Drug tests must be performed within 32 hours after the accident or near accident; alcohol tests must be performed within 3 hours after the accident or near accident.

4.07.2 Return-to-duty: Associates and Covered Persons who have previously refused to take a drug or alcohol test or have failed such a test shall be tested for prohibited drug or alcohol use before they return to work on a job site. An Associate or Covered Person, once returned to duty, may be administered unannounced follow-up drug and alcohol tests for up to 12 months after the Associate’s return to duty.

4.07.3 Reasonable Suspicion Testing: Associates and Covered Persons are subject to a fitness for duty evaluation and urine and/or breath testing when there are reasons to believe that drug or alcohol use is adversely affecting job performance. A reasonable suspicion referral for testing will be made on the basis of documented objective facts and circumstances that are consistent with the short-term effects of substance abuse. Examples of reasonable cause include, but are not limited to the following:

4.07.3.1 Observable phenomena while working such as direct observation of drug or alcohol use or of the physical symptoms or manifestations of being under the influence of a drug or alcohol;
4.07.3.2 Abnormal conduct or erratic behavior or a significant deterioration in work performance;
4.07.3.3 A report of drug or alcohol use provided by a reliable and credible source;
4.07.3.4 Evidence that an Associate or Covered Person has tampered with a drug or alcohol test;
4.07.3.5 Information that an Associate or Covered Person has caused, contributed to, or been involved in an accident or a near accident while working for or on behalf of Duke;
4.07.3.6 Evidence that an Associate or Covered Person has used, possessed, sold, solicited, or transferred drugs or used alcohol while working for or on behalf of Duke.
4.07.3.7 An Associate or Covered Person reasonably suspected of drug or alcohol abuse shall be immediately removed from the Duke job site pending verification of condition by testing.
4.07.3.8 A written record shall be made of the observations leading to reasonable-suspicion testing within twenty-four hours of the observed behavior. A copy of such documentation shall be given to the Associate or Covered Person upon request, and the original documentation shall be kept confidential.

4.07.4 Pre-employment: An applicant seeking employment with Duke as a property manager, leasing representative or maintenance associate in medical office buildings owned, managed, or operated by Duke (“Job Applicant”) must submit to pre-employment drug and alcohol testing. The following procedures shall govern pre-employment testing:

4.07.4.1 After a conditional job offer is made to a Job Applicant, the Job Applicant will be required to submit to drug and alcohol testing and to execute any permission forms or waivers necessary for such tests.
4.07.4.2 The Job Applicant will have twenty-four hours to complete the test.
4.07.4.3 Any offer of employment that the Job Applicant receives from Duke is contingent upon satisfactory completion of the test.

4.08 Testing Validity Procedures

4.08.1 Medical Review Officer: Prior to conducting any drug or alcohol testing under this Policy, Duke shall designate a Medical Review Officer (“MRO”) who shall be a licensed physician with knowledge of substance abuse disorders, laboratory testing procedures, and chain of custody collection procedures; who verifies positive, confirmed test results; and who has the necessary medical training to interpret and evaluate an Associate’s or Covered Person’s positive test result in relation to that person’s medical history or any other relevant biomedical information. Associates and Covered Persons may consult with the MRO for technical information regarding prescription or nonprescription medications.

4.08.2 Facilities: Drug testing will be performed only by qualified medical facilities:
4.08.2.1 Certified by the National Institute on Drug Abuse as meeting the mandatory guidelines published at 54 Federal Register 11970 to 11989, April 11, 1988;
4.08.2.2 Accredited by the College of American Pathologists under the forensic urine drug testing laboratory program; or
4.08.2.3 Licensed to test for drugs under applicable federal, state, or local law.

4.08.3 Collection of Specimen: A specimen for a test may be taken or collected only by:
4.08.3.1 A physician, physician’s assistant, registered professional nurse, licensed practical nurse, nurse practitioner, or a certified paramedic who is present at an accident scene;
4.08.3.2 A qualified person employed by a laboratory certified by the National Institute on Drug Abuse, the College of American Pathologists, or certified under applicable federal, state, or local law; or
4.08.3.3 A qualified person certified under applicable federal, state, or local law.

4.08.4 Chain of Custody: The collection facility must adhere to the collection provisions set forth in the regulations published by the U.S. Department of Health and Human Services entitled "Mandatory Guidelines for Federal Work Place Drug Testing Programs," 53 Fed. Reg. 11970, published April 11, 1988, and 49 CFR Part 40, as amended, or as set forth in applicable federal, state, or local guidelines ("Testing Guidelines"). A strict chain of custody will be maintained on the specimen as described in the Testing Guidelines. In the event that a non-designated collection facility must be used, the Duke supervisor contacting the facility must insure that the facility is properly advised concerning the collection requirements as described in the Testing Guidelines. Record keeping and reporting of all drug testing and results shall be designed to protect the confidentiality of Associates and Covered Persons.

4.09 Testing Procedures
4.09.1 Acknowledgment: Before requesting an Associate to undergo drug or alcohol testing, Duke shall provide the Associate with a form on which to acknowledge that the Associate has received a copy of this Policy and has been informed of the consequences of a positive test or the refusal to be tested.
4.09.2 Relevant Information: An Associate or Covered Person will be allowed to record any information he or she considers relevant to the test, including identification of currently or recently used prescription or nonprescription medication or other relevant medical information, and to transmit that information confidentially to the MRO.
4.09.3 Transportation: Appointments for drug and alcohol testing will be coordinated by Duke supervisory personnel. Supervisors will transport individuals to the collection site. If there is concern about an individual's
ability to function safely, that individual will be provided transportation to their home after completion of the testing.

4.09.4 Drug Testing Levels

4.09.4.1 Initial Test: The initial test shall use an immunoassay that meets the requirements of the U.S. Food and Drug Administration for commercial distribution or requirements under applicable federal, state, or local law. The most current cutoff levels set forth in the Testing Guidelines shall be used when screening specimens to determine whether they are negative for these drugs. These cutoff levels are subject to change as advances in technology or other considerations warrant.

4.09.4.2 Confirmation Test: All specimens identified as positive on the initial test shall be confirmed using gas chromatography/mass spectrometry (GC/MS) techniques using the most current cutoff levels set forth in the Testing Guidelines. These cutoff levels are subject to change as advances in technology or other considerations warrant.

4.09.5 Alcohol Testing Levels

4.09.5.1 Initial Test: The initial test shall be done using an evidential breath-testing device in accordance with 49 CFR, Chapter VI, Part 654. If the initial test results are less than .02 alcohol concentration, the results are negative and will be reported by the technician administering the test as such. If the initial test results are .02 or greater, a second or confirmatory test must be conducted.

4.09.5.2 Confirmation Test: The confirmatory test must be conducted on the same evidential breath-testing device as the initial test in accordance with 49 CFR, Chapter VI, Part 654. Before the confirmatory test may be given, a minimum of 15 minutes and maximum of 20 minutes must have passed since the initial test was performed. During this period, the Associate or Covered Person should avoid any actions that could increase mouth alcohol. The 15-20 minute waiting period is to ensure that the presence of mouth alcohol does not artificially raise the test result. Only the results of the confirmation test shall be reported, irrespective of the results on the initial test. If the results of the initial and confirmatory tests are not identical, the confirmation test result is deemed to be the final test result.

4.09.6 Reporting Test Results: The testing laboratory shall report test results to the MRO within 5 working days after receipt of the specimen by the laboratory. Before any test result is reported (the results of initial tests, confirmatory tests, or quality control data), it shall be reviewed and the test certified as an accurate report by the responsible individual. The results shall state, at a minimum:
4.09.6.1 The name and address of the laboratory which performed the test;
4.09.6.2 The identification of the person tested;
4.09.6.3 Positive results on confirmation tests only, or negative results, as applicable;
4.09.6.4 A list of the drugs for which the drug analyses were conducted; and
4.09.6.5 The type of tests conducted for both initial and confirmation tests and the minimum cut-off levels of the tests.
4.09.6.6 No report shall disclose the presence or absence of any drug other than those drugs to be tested for pursuant to this Policy.

4.09.7 Notification of Test Results
4.09.7.1 Written Notification: The MRO shall provide written notification of a positive test result to the Associate or Covered Person.
4.09.7.2 Split-sample Testing: Within five working days after receipt of the written notification, the Associate or Covered Person may request split sample testing at a separate certified laboratory. This request must be made in writing to the MRO. The cost for transportation and testing of the split sample is the sole responsibility of the Associate or Covered Person and must be paid for in advance.
4.09.7.3 Contesting Test Results: The Associate or Covered Person will have five working days after receipt of the final written notification to contest or explain the positive test result. If that contest or explanation is unsatisfactory to the MRO, the MRO shall report the positive test result to Duke.

4.10 Positive Test/Refusal To Test
4.10.1 An Associate or Covered Person who refuses to submit to a drug and/or alcohol test will be considered to have failed the test. Refusal to comply with the request for drug/alcohol testing will be just cause for discipline up to and including termination of an Associate and removal of a Covered Person from the Duke job site. Behavior that constitutes a refusal to submit to a test includes, but is not limited to, the following:
4.10.1.1 Refusal to take the test.
4.10.1.2 Inability to provide sufficient quantities of breath or urine to be tested without a valid medical explanation.
4.10.1.3 Tampering with or attempting to adulterate the specimen or collection procedure or any other action designed to dilute the specimen or otherwise alter the results of the testing.
4.10.1.4 Not reporting to the collection site in the allotted time.
4.10.1.5 Leaving the scene of—or failing to immediately report—an accident resulting in vehicle or property damage, in loss of life, in an injury requiring medical attention, or in an injury required to be reported under applicable Occupational Safety and Health statutes and regulations (other than injuries resulting from insect or spider stings or bites and rashes resulting from
exposure to poison ivy, poison oak, and other similar plants) or leaving the scene of a near accident that could have resulted in vehicle or property damage, in loss of life, or in an injury.

4.10.2 A positive test is a violation of this Policy. If a positive test is reported, it is understood that the initial test was positive and that a confirmatory test was also positive. Associates or Covered Persons failing a drug test will immediately be removed from the Duke job site, and Associates may be disciplined up to and including termination; in addition, Associates may forfeit their rights to receive workers’ compensation and/or unemployment compensation.

4.11 Changes or Modifications

4.11.1 Duke reserves the right to change the provisions of this testing procedure. All Associates will be notified at least 15 calendar days prior to instituting the changes. Changes required by Federal, State and/or Local law will not require advance notification.

4.12 Contact Person

4.12.1 Questions concerning this Policy may be addressed to:
Ms. Pamela Marshall
Assistant Risk Manager
Duke Realty Corporation
3950 Shackleford Road, Ste. 300
Duluth, GA  30096
(770) 638-2660

END OF SECTION
SECTION 01050 - FIELD ENGINEERING

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Verify dimensions on the drawings and report errors or inconsistencies to the Contractor before commencement of work.
B. The Contractor will provide permanent control points consisting of the property corners and one benchmark elevation.
C. The Subcontractor will provide for all Surveying and layout required for the complete execution of its Work.

1.03 Survey Reference Points

A. The Subcontractor shall locate and protect control points prior to starting site work and preserve all permanent reference points during construction.

1. Make no changes or relocations without prior written notice to Contractor.
2. Report to Contractor when any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations.
3. The Contractor may require surveyor to replace project control points which may be lost or destroyed.
   a. Establish replacements based on original survey control.

1.04 Project Survey Requirements

A. Establish lines and levels, locate and layout, by instrumentation and similar appropriate means:

1. Site improvements.
   a. Stakes for grading, fill and topsoil placement.
   b. Utility slopes and invert elevations.
2. Batter boards for structures.
3. Building foundation, column locations and floor levels.
4. Controlling lines and levels required for the mechanical and electrical trades.

B. From time to time, verify layouts by the same methods.

1.05 Records
A. The Surveyor shall maintain a complete, accurate log of all control and survey work as it progresses.

1.06 Submittals

A. At request of the Contractor, submit documentation to verify the accuracy of field engineering work.

END OF SECTION
SECTION 01100 - ALTERNATES

1.01 Related Documents

A. Drawings and general provisions of Subcontract and Division 1 Specification Sections, apply to work of this section.

1.02 Description of Work

A. Definitions: Alternates are defined as alternate products, materials, equipment, installations or systems for the work, which may, at Contractor’s option, and under terms established by Instructions to Bidders, be selected and recorded in the Subcontract to either supplement or displace corresponding basic requirements of Contract Documents. Alternates may or may not substantially change scope and general character or the Work.

B. General Provisions: A “Schedule of Alternates” is included at the end of this section. Each alternate is defined by abbreviated language, recognizing that drawings and specification sections document the requirements. Coordination of related work is required to ensure that work affected by each selected alternate is complete and properly interfaced with work of alternates.

1. The Contractor shall have the right to accept Alternates in any order or combination.

C. Notification: In the Contract, Contractor to provide notification of the status of each alternate and indicate which alternates have been:

   1) accepted,
   2) rejected, and
   3) deferred for consideration at a later date as indicated.

D. Schedule of Alternates: If alternate prices are required they will be specifically requested by the Contractor.

END OF SECTION
SECTION 01200 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 Requirements Included

A. Contractor will schedule and administer and Subcontractor shall attend preconstruction meetings, periodic progress meetings, and specially-called meetings throughout progress of the Work.

B. Representatives of Subcontractors and Suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

C. Architect/Engineer may attend meetings to ascertain that work is expedited consistent with Contract Documents and construction schedule.

1.03 Preconstruction Meeting

A. At the sole option of the Contractor, a Preconstruction Meeting may be scheduled.

B. Location: A central site, convenient for all parties, designated by the Contractor.

C. Attendance:

1. Contractor. and other consultants, subcontractors, Owner, or others as required by the Contractor

D. Suggested Agenda:

1. Discussion of construction schedules.
2. Critical work sequencing.
3. Major equipment deliveries and priorities.
4. Project coordination:
   a. Designation of responsible personnel.
5. Procedures and process of:
   a. Field decisions.
   b. Proposal requests.
   c. Submittals.
   d. Change Orders.
   e. Applications for payment.
7. Procedures for maintaining Record documents.
8. Use of premises:
   a. office, work and storage areas.
   b. Owner’s requirements.
10. Temporary utilities.
11. Safety and first aid procedures.
13. Housekeeping procedures.

1.04 Progress Meeting

A. Subcontractors shall attend regular periodic meetings with Contractor as determined by Contractor.

B. Location of the meetings: To be determined by Contractor.

C. Attendance:
   1. Subcontractors as appropriate to the agenda.
   2. Major suppliers as appropriate to the agenda.
   3. Others.

D. Suggested Agenda:
   1. Review, approval of minutes of previous meeting.
   2. Review of work progress since previous meeting.
   3. Field observations, problems, conflicts.
   4. Problems which impede construction schedule.
   5. Review of off-site fabrication, delivery schedules.
   6. Corrective measures and procedures to regain projected schedule.
   7. Revisions to construction schedule.
   8. Progress, schedule, during succeeding work period.
   9. Coordination of schedules.
   10. Review submittal schedules; expedite as required.
   12. Pending changes and substitutions.
   13. Review proposed changes for:
      a. Effect on construction schedule and on completion date.
      b. Effect on other contracts of the Project.

14. Other business.

END OF SECTION
SECTION 01310 - CONSTRUCTION SCHEDULES

PART I - GENERAL

1.1 Requirements Included

A. The Contractor shall prepare a detailed construction schedule and attach to the Subcontract as an exhibit to the contract.
   1. This Construction Schedule is a part of the Contract Documents.
   2. Each Subcontractor and Material Supplier shall furnish sufficient labor and equipment and shall work such hours, including night shifts and overtime, as may be necessary to ensure the progress of the Work in accordance with this Construction Schedule.
   3. For delays and extension of time refer to Subcontract Agreement.

B. Submit revised progress schedules periodically.

1.02 Related Requirements

A. Conditions of the Subcontract.

B. Summary of Work: Refer to each individual Subcontract.

C. Section 01200: Project Meetings.

D. Section 01340: Shop Drawings, Product Data and Samples.

1.03 Form of Schedules

A. Prepare schedules in the form attached at the end of this section.

1.04 Progress Revisions

A. Indicate progress of each activity to date of submission.

B. Show changes occurring since previous submission of schedule:
   1. Major changes in scope.
   2. Activities modified since previous submission.
   3. Revised projections of progress and completion.
   4. Other identifiable changes.

1.06 Submissions

A. If specifically requested by the Contractor; Submit initial schedules within 15 days after award of Contract.
   1. Contractor will review schedules and return review copy within 10 days after receipt.
   2. If required, resubmit within 2 days after return of review copy.
B. Contractor may require revised construction schedules with each application for payment, if deemed necessary.

C. Submit one reproducible transparency if requested by Contractor and one opaque reproduction.

1.07 Coordination

A. The Contractor will review and coordinate the schedule submittals of the various Subcontractors.

B. The Contractor may revise the Construction Schedule, as necessary.

PART 2 - CONSTRUCTION PROGRESS SCHEDULE

END OF SECTION
SECTION 01320 – CAD DRAWING STANDARDS

PART I - GENERAL
1.01 Requirements Included
   A. Become thoroughly familiar with the Duke CAD Drawing Standards.
   B. Submit Design/Build drawings to the Contractor which utilize the CAD Drawing Standards.

1.02 Related Requirements

1.03 Content of Standards
   A. The standards defined in the manual are to be utilized in the production and archival of all sets of construction documents created for the Contractor and the Owner.
   B. The standards are to provide a consistent foundation for the continued development of the Contractor’s Computer Aided Facilities Management System.
   C. The objective of these standards to provide a convenient method of data acquisition and management of all graphical and non-graphical objects used in the generation of a set of construction drawings.
   D. This will be achieved by implementing uniform sheet/file naming, layering, and block naming conventions.

1.04 Overview of Key Factors
   A. There are three key points to be presented in the standards:
      1. File naming & Sheet naming
         a) Standardized sheet numbering will be used on each construction drawing, and the filename for that sheet will be the same as that sheet number.
         b) An example would be a floor plan sheet, named “A201”, with “A201.dwg” as the cad filename.
      2. Submittals of files
         a) Electronic copies of each construction drawing will be submitted to the Contractor upon completion of a project.
         b) Additional files may be required from Facilities Management firms.
         c) This submittal should be done by email or compact disk to the Contractor’s office.
      3. All external references and image files must be bound prior to submittal to Duke.

1.05 Software
   A. The Contractor recommends the most recent versions of computer-aided drafting and design software as manufactured by Softdesk, AEC Group, or Autodesk, Inc.
   B. If three dimensional editing is undertaken within the software package, caution must be taken so that two dimensional editing may be performed at a later date.

1.06 Progress Revisions
   A. It is important to note that these standards will evolve. Addenda will be sent out as necessary, to incorporate changes into these standards.

END OF SECTION
SECTION 01340 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 - GENERAL

1.01 Requirements Included
A. Subcontractors shall submit shop drawings, product data and samples required by the Contract Documents to the Contractor.
B. Subcontractors shall submit all shop drawings and product data for all equipment in a given system at one time, each complete set in a separate brochure.

1.02 Shop Drawings
A. Present drawings in a clear and thorough manner.
   1. Identify details by reference to sheet and detail, schedule or room numbers shown on contract drawings.
B. Number all shop drawings in a consecutive sequence and indicate on each sheet the total number of sheets in the set.
C. Minimum sheet size: 8 1/2 x 11 inches.
D. Include sufficient data in each set of shop drawings to permit a detailed study of the product or system submitted.

1.03 Product Data
A. Preparation:
   1. Clearly mark each copy to identify pertinent products or models.
   2. Show performance characteristics and capacities.
   3. Shop dimensions and clearances required.
   4. Show wiring or piping diagrams and controls.
B. Manufacturer's standard schematic drawings and diagrams:
   1. Modify drawings and diagrams to delete information which is not applicable to the work.
   2. Supplement standard information to provide information specifically applicable to the work.

1.04 Samples
A. Office samples shall be of sufficient size and quantity to clearly illustrate:
   1. Functional characteristics of the product, with integrally related parts and attachment devices.
   2. Full range of color, texture and pattern.
B. Field samples and mock-ups:
   1. Subcontractor shall erect, at the Project site, at a location acceptable to the Contractor.
   2. Size of area: That specified in the respective specification section.
   3. Fabricate each sample and mockup complete and finished.
   4. Remove mockups at conclusion of work or when acceptable to the Contractor.

1.05 Contractor's Responsibilities
A. Review shop drawings, product data and samples before submission.
B. Determine and verify:
   1. Field measurements.
   2. Field construction criteria.
   3. Catalog numbers and similar data. Conformance with specifications.
C. Coordinate each submittal with requirements of the work and of the Contract Documents.
D. Notify the Contractor in writing, at time of submission, of any deviation in the submittals from requirements of the Contract Documents. Approval of submittals containing any deviation from the requirements of the Contract Documents will not alleviate the Subcontractor of its responsibility to conform with the Contract Documents unless these deviations are specifically approved in writing by the Architect/Engineer and the Contractor.
E. Begin no fabrication of work which requires submittals until return of submittals with Architect/Engineer and Contractor approval.

1.06 Submission Requirements

A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the work or in the work of any other Contractor or Subcontractor. In the absence of an approved schedule, transmit all shop drawings, product data and samples through the Contractor to the Architect/Engineer within 10 days after the date of the Contract, or present, in writing, valid reasons for any delay.

B. The Contractor will review the submittals for conformance to the Construction Documents and coordination, prior to submittal to the Architect/Engineer. Submittals not in conformance or not coordinated will be returned to the Subcontractor for revision and resubmittal.

C. Number of submittals required:

1. Shop Drawings: Submit one set of reproducible transparencies, reverse printed, and six sets of blue line reproduction.
   a) Transparencies shall not be folded, but shall be rolled and transmitted in a tube suitable for mailing.
   b) Transparencies and two sets of blue line reproductions will be returned to the Subcontractor who will make the number of copies the Subcontractor requires and return the transparencies and one set of blue line reproductions to the Contractor who may make the number of copies the Contractor requires. Two sets of blue lines reproductions will be retained by the Architect/Engineer.

2. Product Data: submit the number of copies which the Subcontractor requires, plus three. One will be retained by the Contractor and two will be retained by the Architect/Engineer. Submit in bound and indexed brochures. If the product data brochures contain sheets larger than 8-1/2 x 11 inches, bind in a manner to allow them to be unfolded for reading without being removed from the binding.

3. Samples: Submit three sets unless specified otherwise in individual specification sections. One set will be returned to the Subcontractor, one set will be retained by the Contractor and one set will be retained by the Architect/Engineer.

D. Each sheet and item of submittals shall contain:

1. The date of submission and the dates of any previous submissions.
2. The Project title and number.
4. The names of:
   a) Subcontractor.
   b) Supplier.
   c) Manufacturer/Fabricator.
5. Identification of the product, with the specification section, page and paragraph number.
6. Field dimensions, clearly identified as such.
7. Relation to adjacent or critical features of the work or materials.
8. Applicable standards, such as ASTM or Federal Specification numbers.
10. Identification of revisions or resubmittals.
11. An 8 inch x 3 inch blank space for Subcontractor, Contractor and Architect/Engineer stamps.
12. Subcontractor's stamped, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the Work and of Contract Documents.

1.07 Resubmission Requirements
A. Make any corrections or changes in the submittals required by the Contractor or Architect/Engineer and resubmit until approved.

B. Shop drawings and product data:
   1. Revise initial drawings and data and resubmit as specified for the initial submittal.
   2. Indicate any changes which have been made other than those requested by the Contractor or Architect/Engineer.

1.08 Distribution
A. Distribute reproductions of shop drawings and copies of product data which carry the Architect/Engineer stamp of approval to:
   1. jobsite file.
   2. Record Documents file.
   3. Other affected Contractors.
   4. Other affected Subcontractors.
   5. Supplier or fabricator.

B. Distribute samples which carry the Architect/Engineer stamp of approval as directed by the Architect/Engineer.

1.09 Architect/Engineer’s Duties
A. Review submittals with reasonable promptness and in accordance with schedule.

B. Affix stamp and initials or signature, and indicate requirements for resubmittal, or approval of submittal.

C. After review, the Architect/Engineer will have prints made for his use and will then return the sepia transparencies to the Subcontractor through the Contractor marked "No Exceptions Taken", "Note Markings", "Rejected", or "Resubmit". Those marked "Rejected" or "Resubmit" and returned for correction shall be corrected and resubmitted. Upon receiving the "No Exceptions Taken" or "Note Markings" sepia sets from the Architect/Engineer, the Subcontractor shall have sufficient sets of prints made from them for distribution.

END OF SECTION
SECTION 01350 - PRODUCT HANDLING

PART 1 - GENERAL

1.1 DEFINITION

A. Product Handling shall mean the complete process of delivery, handling, unloading and storage of all materials, including equipment, tools, and supplies shipped to the Project Site.

1.2 DELIVERY

A. Deliver materials, supplies or equipment to Project site during working hours.

B. Deliveries made during other than normal working hours must be received by an authorized agent of Subcontractor involved or be received by other means, which shall be the sole responsibility of that Subcontractor. These deliveries shall be approved by the Contractor.

C. No employee of the Owner or Contractor is authorized to receive any shipment designated for this Project for the Subcontractor’s work.

D. The Owner or Contractor assumes no responsibility for receiving any shipments designated for this Project for the Subcontractor’s work.

E. Any materials delivered in the presence of Owner’s or Contractor’s representative shall be accounted for by the respective Subcontractor.

F. Under no circumstances may shipments be directed to, or in care of, the Owner or the Contractor.

G. Each Sub-Subcontractor, manufacturer, or supplier furnishing materials to the site, shall identify, ship, address, consign, etc., all such materials to the Subcontractor who may be charged therewith by giving the name of the Subcontractor, the name and address of the Project.

1.3 HANDLING AND UNLOADING

A. Immediately upon delivery, the Subcontractor shall check for any damage to materials that occurred prior to or during shipment. Damaged material shall be replaced or repaired to a "like-new" condition and must be approved by and/or acceptable to the Contractor.

B. Handling and/or unloading shall be performed so as to not cause any damage to materials permanently incorporated in the Work.

C. Unloading materials only where it will not interfere with Tenant, Owner, Contractor or other Subcontractor’s operations.

END OF SECTION
SECTION 01410 - INDEPENDENT TESTING LABORATORY SERVICES

Part 1 - General

1.01 Employment of Laboratory

A. The Contractor will select and pay for the services of an Independent Testing Laboratory to perform inspections and tests of construction systems and materials.

1.02 Testing Laboratory Inspection

A. Sampling and testing may be required for:
   1. Asphalt concrete paving.
   2. Excavation and backfill.
   4. Masonry mortar.
   5. Structural Steel
   6. Roofing
   7. Metal decking.
   8. Aluminum framing systems (storefront, windows and window walls).
   9. Any other building materials or systems deemed necessary by the Contractor.

1.03 Subcontractor's Responsibilities

A. Employment of testing laboratory shall in no way relieve the Subcontractor's obligations to perform the Work of the Contract.

B. Cooperate with the laboratory personnel and provide access to the Work.

C. Make available to the laboratory, at no cost, samples of all materials to be tested.

D. Advise the laboratory of the identity of material sources and instruct suppliers to allow inspection by the laboratory.

E. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other material mixes which require control by the testing laboratory.

F. Furnish copies of the products' test reports as required.

G. Furnish mill test showing the heat numbers of all the structural steel to the Architect/Engineer.

H. Furnish incidental labor and facilities.
   1. To provide access to Work to be tested.
   2. To obtain and handle samples at the project site or at the source of the product to be tested.
   3. To facilitate inspections and tests.
   4. For storage and curing of test samples.
   5. To make repairs to construction from which sample is taken.

I. Notify the laboratory sufficiently in advance of operations to allow for the laboratory assignment of personnel and scheduling of tests.

J. Make arrangements with the laboratory and pay for additional samples and tests required for the Subcontractor's Convenience.

K. Employ and pay for the services of a separate, equally qualified independent testing laboratory to perform additional inspections, samples and testing required when initial tests indicate Work does not comply with the contract Documents.

L. Remove and replace, at the Subcontractor's expense, any work which is rejected as a result of tests performed by reason of failure to conform to the requirements of the Contract Documents.

1.04 Reference Standards

A. AISI: American Iron and Steel Institute, 150 East Forty-Second Street, New York, New York 10017, U.S.A.

   1. A 36 - Structural Steel
   2. A 325 - High Strength Bolts for Structural Steel Joints
3. A 490 - Quenched and Tempered Alloy Steel Bolts for Structural Steel.
4. A 570 - Hot-Rolled Carbon Steel Sheets and Strips, Structural Quality.
5. A 572 - High Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality.
6. A 615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
7. C 31 - Making and Curing Concrete Test Specimens in the Field.
9. C 143 - Slump of Portland Cement Concrete.
10. D 698 - Moisture Density Relations of Soils Using 5.5 lb. (2.5 Kg.) Rammer and 12 inch (305mm) drop.
11. D 3617 - Recommended Practice for Sampling and Analysis of New Built-Up Roof Membranes.

C. AWS: American Welding Society, Inc., 2501 Northwest 7th Street, Miami, Florida 33125 U.S.A.
1. 01.1-72 (D1.1-75) - Structural Welding Code.
E. Research Council on Riveted and Bolted Structural Joints, c/o Industrial Fasteners Institute, 1505 East Ohio Building, 1717 East Ninth Street, Cleveland, Ohio 44113, U.S.A.
F. NAAMM: National Association of Architectural Metal Manufacturer's, 221 North LaSalle Street, Chicago, Illinois 60601.
1. NAAMM FC-1-69 Field Test for water penetration.

PART 2 - SPECIFIC TESTS, INSPECTIONS AND METHODS
2.01 EXCAVATION AND BACKFILL
   A. Compacted soils, structural fill and backfill:
      1. Secure samples of the soils proposed for use:
         a) Test for suitability.
         b) Establish optimum moisture/density relationship in accordance with ASTM D698.
      B. Perform in-place density moisture tests for each lift of soil compacted. Such tests shall be made not less frequently than one (1) test each lift. Retest, after further compaction, soil which has been compacted to less than the required density.

2.02 Concrete
   Sampling and testing for quality control during placement of concrete shall include the following:
   A. Laboratory technician shall:
      1. Inspect concrete placement
      2. Make slump cone tests, and test cylinders as specified below for control of concrete consistency.
      3. Secure samples of aggregates that the Subcontractor proposes to use and test for compliance with specifications.
      4. Perform appropriate laboratory tests, including compression tests of cylinders and slump test to substantiate mix designs, and submit two (2) copies of the report to the Contractor and to the Architect/Engineer and one to the Subcontractor, clearly indicating mix proportions for the Subcontractor to use.
      5. Inspect and test materials during all concrete work for compliance with the specifications and mix requirements.
      6. Determine the consistency of the mix design for each concrete placement.
   B. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.
      1. Slump: ASTM C 143; one test at point of placement as follows:
         a) Foundations: One per test specimen set.
b) Slabs: One test every other truck or twenty yards.

2. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231 pressure method for normal weight concrete; one per specimen set of each type of air-entrained concrete.

3. Concrete Temperature: Test hourly during duration of pour. When total quantity of a give class of concrete is less than 50 cu. yds. Engineer may waive strength test if adequate evidence of satisfactory strength is provided.

Concrete Yield Test - Minimum one (1) per project - recommend first floor slab pour.

C. Cylinder Tests:
   1. Provide a minimum of one (1) test of 3 cylinders each on each day fresh concrete is placed.
   2. If any one placement exceeds 100 cubic yards (76 cubic m), provide an additional test of 3 cylinders for each 100 cubic yards (76 cubic m), or any portion thereof placed.
   3. Mold and cure test cylinders in accordance with ASTM C31.
      a) Test to failure one cylinder of each test at 7 days and two at 28 days.
      b) Test one cylinder at 14 days if determined necessary by the Architect/Engineer.
      c) Mark each cylinder to indicate the location of concrete from which the specimens are taken.
   5. Provide to the Contractor written notice that the concrete in the footings, piers and walls and the mortar in the masonry piers and walls has attained, on the basis of an appropriate ASTM standard test method of field-cured samples, either:
      a) 75 percent of the intended minimum compressive design strength, or
      b) sufficient strength to support the loads imposed during steel erection
   6. Perform slump tests in accordance with ASTM C 143 for each bath of concrete from which test cylinders are made.
   7. Measure and record temperature of fresh concrete prior to placement.
   8. Cylinder tests are not required for slab-on-grade when flexure strength tests are performed in accordance with 2.02.D.

D. Flexure Strength of Concrete: ASTM C78. The required flexural strength of concrete used for concrete slabs-on-grades shall be established prior to start of concrete placement operations.
   1. One test specimen set per four bays of floor slab. No less than one set per pour.
      Four beams per specimen set, mold and store for lab curing. Test one at 28 days, two at 56 days, one spare.

E. Concrete Floor Flatness and Levelness
   1. a) Two (2) Devices may be used to run tests, type I device-dipstick, type II device - wheel.
      b) The device being used must have been calibrated within the past three months.
   2. Layout Pattern Per ASTM E1155-87 (either is acceptable)
      a) 45 degree angles to the longest boundary (x pattern).
      b) 90 degree angle to the longest boundary (+ pattern).
   3. Perform the floor flatness and levelness testing as follows:
      a) Minimum of the first three (3) slab pours.
      b) Minimum of every other slab pour after the first three (3) slab pours.
      c) Testing must be performed within 48 hours after slab is poured.
   4. At Construction Joints:
a) All construction joints must be checked with a 10-foot straight edge centered on the construction joint. Any joint that has more than an 1/8 inch or larger gap under the straight edge either at the center (joint too low) or at the ends (joint too high - straight edge rocks) will require grinding until the 1/8 inch tolerance is met or the joint is acceptable.

b) The construction joints must be checked within 48 hours after the last abutting slab is poured.

F. Test results will be reported in writing to Contractor, Structural Engineer, Ready-Mix Producer, and Subcontractor 7 days after tests. Reports of tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, specified strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.

2.03 TESTS FOR STRUCTURAL STEEL

A. Testing

1. Tests of Welding: The laboratory shall visually inspect field welding. The laboratory shall confirm work complies with all regulations of the governing codes and shall certify in writing, upon completion of the Work, that the work is in accordance with the Construction Documents and all applicable codes.

- Inspection of welds: Inspect full penetration welded connections of column to column, column to girder, girder to column, girder to girder or bearing haunch to column by ultrasonic or other approved non-destructive tests. Provide visual inspection of all other welds.

- Qualifications of welders: Verify the certification of each welder on the job, including their qualifications for particular positions of work on the structure.

Ultrasonic Weld Testing:

- Perform ultrasonic testing according to AWS D1.1-92, as amended, by a specially trained, qualified technician, who shall operate the equipment, examine the welds and maintain a record of all welds examined, defects found and disposition of each defect. All defective welds shall be repaired and all costs, including retesting of defective welds shall be borne by the Subcontractor.

- Initially, all welds requiring ultrasonic testing shall be tested at the rate of 100 percent in order to establish the qualifications of each individual welder. If rejectable defects occur in less than 5 percent of the welds tested, the frequency of testing may be reduced to 25 percent. If the rate of rejectable defects increases to 5 percent or more, 100 percent of the testing shall be re-established until the rate is reduced to less than 5 percent. Calculate the percentage for each welder independently.

- When ultrasonic indications arising from the weld root can be interpreted as either a weld defect or the backing strip, remove the backing strip at the expense of the Subcontractor. If no root defect is indicated on this retest and no significant amount of the base and weld metal have been removed, the joint need no further repair or welding. If a defect is indicated, it shall be repaired.

- Questionable root indications that prove not to be defects shall not count against the welder to increase the test rate.

- The ultrasonic instrumentation shall be calibrated by the technician to evaluate the quality of the welds in accordance with AWS D1.1-92 as amended.

2. Testing of high strength bolted connections:
a) Perform periodic checks of high strength steel bolt connections in the field. The subcontractor performing the steel erection shall maintain, at all times during the erection, a manual torque wrench, and shall provide a laborer and scaffolding as required for the testing and inspection work to be performed by the testing agency. The testing agency shall also inspect the calibrated, manual or power torque equipment intended for use by the Subcontractor in performing high strength bolting operations. Bolts in connections not identified as being slip-critical nor subject to direct tension nor as tensioned bearing connections shall not be inspected for bolt tension.

b) Perform testing in accordance with the methods and procedures specified in the specifications for “Specifications for Structural Joints Using ASTM A 325 or ASTM A 490 Bolts” as approved by the Research council on Structural Connections of the Engineering Foundation, dated June 8, 1988. If load indicator washers are used, installation and testing procedures shall follow indicator manufacturer’s recommendations, including corrections to be made for galvanized installations.

3. Tests and Inspection of Studs:
   a) Weld a minimum of 2 shear connector studs at the start of each production period in order to determine proper generator, control unit and stud welder settings. These studs will be capable of being bent 45 degrees from vertical without weld failure. If, after welding, visual inspection reveals that a sound weld or a full 360 degree fillet has not been obtained for a particular stud, such stud shall be struck with a hammer and bent approximately 15 degrees off perpendicular to the nearest end of the beam. Studs meeting this test shall be considered acceptable and shall be left in this position. Replace and retest studs failing under this test.

   b) When the temperature is below 32 degrees F (0 degree C), test one stud per 100 after cooling. When welding to ASTM A 572, below the steel producer’s recommended temperature requiring preheating, test one stud in each 100 after cooling. If the stud fails in the weld, two new studs shall pass the test before resumption of the welding.

4. Tests and Inspection of Metal Decking:
   a) The laboratory shall provide inspection of the welding of the metal decking.
   b) Laboratory inspectors shall comply with the requirements for fall protection when required.

2.04 Sprayed-On Fireproofing

A. Field test and inspect the sprayed-on fireproofing applied to the structural framing including inspection of all substrate and the testing of applications for the following:
   1. Thickness
   2. Density
   3. Bond
   4. Resistance to cracking

2.05 Asphalt Paving and Base

1. Review Subcontractor’s proposed materials and mix proportions.
2. Secure samples and test for compliance with specifications.
3. Inspect and test materials and mix proportions during full production and effect such minor adjustments for proportions as may be necessary.
4. Perform density and stability test to ensure compliance with specifications.
5. Core in place sections of pavement/base when instructed by Architect/Engineer or Contractor.

2.06 Roof Assembly
A. Testing laboratory shall test ballast weights and submit a written report to the Architect/Engineer and Contractor after determining whether specification requirements were fulfilled.

B. Refer to roofing section for test and/or certification requirements. Comply with governing ASTM standard for specific roof system utilized, in providing for sampling and analyzing of new roof system installed.

END OF SECTION
SECTION 01501 - TEMPORARY PROTECTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Related requirement specified elsewhere.
   1. Section 01010 - Summary of Work.
   2. Section 01500 - Temporary Facilities.
   3. Section 01505 - Temporary Equipment and Work Items.

B. In addition to the requirements of the Subcontract, the following requirements shall be complied with in respect to Temporary Protection.

1.2 GUARDRAILS AND BARRICADES

A. Subcontractor shall provide guardrails, barricades, fences, footways and other devices necessary to protect personnel and employees at the site, and the public, against hazards on or adjacent to the construction site. Remove fences when directed.

B. Temporary barricades and other work required for the protection of the public, the construction personnel, existing buildings and the new building construction, shall be constructed and maintained by the Subcontractor during the period of construction.
   1. Erect barricades as required by applicable laws at excavations, slab edges, slab openings and other building hazards. Remove and legally dispose of barricades when directed.

C. All construction of this nature shall conform to the requirements of the local building code.
   1. Provide signs, warning lights, signals, flags and illumination as necessary to alert persons to hazards and to provide safe, adequate visibility in the areas of hazards.

1.3 TEMPORARY ENCLOSURES

A. Each Subcontractor shall be responsible for temporary enclosure requirements directly related to the scope of work which the Subcontractor is performing.

B. Temporary enclosures shall be weather-tight and adequate, as necessary to provide acceptable working conditions, to protect stored materials, to allow for temporary heating, and to prevent entry of unauthorized persons.

END OF SECTION
SECTION 01505 - TEMPORARY EQUIPMENT AND WORK

PART 1 - GENERAL

1.1 DESCRIPTION

A. Related requirements specified elsewhere.
   1. Section 01010 - Summary of Work

B. In addition to the requirements of the Subcontract, the following requirements shall be completed with in respect to Temporary Equipment and Work Items.

1.2 TEMPORARY EQUIPMENT AND WORK ITEMS

A. The Subcontractor shall provide the following listed temporary equipment and work items; maintain and remove same at completion where applicable, and as relating to the work performed by the Subcontractor.
   1. Temporary heat, protective enclosures, concrete blankets, straw, etc., for specific items of work such as masonry, drywall, and concrete on the exterior and interior.
   2. Temporary heat for field offices and storage buildings.
   3. Grounded UL approved extension cords from work area to power source and any additional lighting required to perform the work, and as required by applicable laws, in addition to that provided in Section 01511.
   4. Restoration of areas damaged by Subcontractors construction operations.
   5. Removal of snow, frost and ice for work continuance.
   6. Layout of work from established base lines and bench marks (see 01030).
   7. Receiving of materials at the site.
   8. Barricades for protection of people and property, including warning signs, traffic control signs, flashers, etc.
   9. Acceptable fire protection within five (5) feet of any burning, welding, curing or soldering operations.
  10. Replace barricades removed for convenience or for access to the Work.
  11. Materials hoisting systems or equipment to expedite the Work.
  12. Ladders or other required access to excavations.

END OF SECTION
SECTION 01510 - TEMPORARY UTILITIES & SERVICE

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Subcontractor shall furnish, install and maintain temporary utilities required for his construction, over and above the temporary services provided by various Subcontractors described herein, and removal of same on completion of work.

B. Various Subcontractors will furnish, install and maintain temporary utilities, as specified herein, for the shared use of all Subcontractors.

1.2 REQUIREMENTS OF REGULATORY AGENCIES

A. Comply with National Electric code.

B. Comply with Federal, State and local codes and regulations and with utility company requirements.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

2.2 TEMPORARY ELECTRICITY AND LIGHTING

A. The Subcontractor shall furnish all temporary power and lighting required for the execution of its Work until such time as the temporary power system provided by the Electrical Subcontractor is installed.

B. The Contractor will pay the energy cost of the power consumed during construction for temporary lighting and power once the temporary power system has been installed.

C. One temporary power is available to the project, the Electrical Subcontractor shall install circuit and branch wiring with area distribution boxes located so that power and lighting is available throughout the construction by use of the construction type power cords.

D. The Electrical Subcontractor shall provide adequate artificial lighting for all areas of work where natural light is not adequate for work, and for areas accessible to the public.

2.03 Temporary Heat and Ventilation

A. Each Subcontractor shall provide temporary heat and ventilation as required to maintain adequate environmental conditions to facilitate progress of its work, to meet specified minimum conditions for the installation of his materials and to protect his materials and finishes from damage due to temperature or humidity.

1. Provide adequate forced ventilation of enclosed areas for curing of installed
materials, to disperse humidity and to prevent hazardous accumulations of
dust, fumes, vapors, or gasses.

2. Portable heaters shall be standard approved units complete with controls.

3. Electric-resistance space heaters may be used only where use of no other, more
energy-efficient, type of heater is feasible or allowable. Obtain written
permission from the Contractor prior to use on the Project.

B. Each Subcontractor shall pay all costs of installation, maintenance, operation, removal
and fuel used.

2.4 TEMPORARY TELEPHONE SERVICE

A. Arrange with local telephone service company to provide direct line telephone service at the
construction site for the use of personnel and employees.

1. The Contractor will provide telephone service for the Field Office to meet
the needs of the Contractor.

2. Each Subcontractor shall provide all temporary telephone services they require.

B. Each Subcontractor shall pay all costs for installation, maintenance and removal of their
telephones, including all local service calls.

1. Any toll charges shall be paid by the party who places the call.

2.5 TEMPORARY WATER

A. The Contractor shall furnish any temporary water sources and the
water required for the execution of its Work until such time as the permanent water
system provided by the Plumbing Subcontractor is installed.

B. Once the permanent water system has been installed, the Contractor will pay for
the water consumed for construction purposes.

C. Subcontractor shall provide drinking water for his own forces.

2.6 TEMPORARY SANITARY FACILITIES

A. Contractor will provide temporary sanitary facilities.
   1. Provide sanitary facilities in compliance with laws and regulations.
   2. Service, clean and maintain facilities and enclosures.
   3. Permanent plumbing facilities shall not be used by construction personnel.

PART 3 - EXECUTION

3.1 GENERAL

A. Comply with applicable requirements specified in Division 15 - Mechanical, and in Division
16 - Electrical.
B. Maintain and operate systems to assure continuous service.

C. Modify and extend systems as work progress requires.

3.2 REMOVAL

A. Completely remove temporary materials and equipment when their use is no longer required.

B. Clean and repair damage caused by temporary installations or use of temporary facilities.

C. Restore existing facilities used for temporary services to specified, or to original condition.

D. Restore permanent facilities used for temporary services to specified condition.
   1. Prior to final inspection, remove temporary lamps and install new lamps.

END OF SECTION
SECTION 01518 - TEMPORARY FIRE PROTECTION

Part 1 - General

1.01 Work Included

A. The Contractor will provide minimum temporary fire protection for the project as follows:

1. Fire Fighting Equipment

a. One (1) 5 lb. ABC fire extinguisher will be located in the Contractor's field office.

b. A minimum of two (2) 10lb. ABC fire extinguishers will be located in a single story building.

c. A minimum of two (2) lb. ABC fire extinguishers will be located on each floor of a multi-story building.

d. All Subcontractors shall be responsible to provide any additional fire extinguishers or fire fighting equipment in their individual work areas as may be required by applicable law(s) and code(s).

2. Fire Protection Program and Temporary Alarm System

a. The temporary alarm system for a single story building in the event of a fire shall be by voice sounded throughout the building. Upon voice alarm of fire, all Subcontractor personnel are to evacuate the building, sound alarm while evacuating, call the Fire Department, and notify the Construction Manager's field personnel.

b. The temporary alarm system for a multi-story building in the event of a fire shall be by bells(s) or horn(s) activated by a clearly marked button or switch located on each floor of the building. The installation and removal of this temporary alarm system shall be the responsibility of the Electrical Subcontractor. The Electrical Subcontractor shall place the temporary alarm system in service as soon as practically possible following completion of each elevated floor slab and shall maintain the temporary alarm system throughout the remaining portion of the building's construction or until the permanent alarm system is fully operational. Upon activation of the temporary alarm system, all construction personnel are to immediately evacuate the building unless they are involved in the fighting of incipient fire(s), call the Fire Department, and notify the Contractor's field personnel.

c. The Contractor shall post the Project Fire Protection Program next to the emergency phone number placard located in the Contractor's field office and at the main Subcontractor personnel entrance to the building.
d. The Subcontractor shall instruct all of his personnel assigned to the project to read and follow the posted Project Fire Protection Program.

e. See Project Fire Protection Program following this Section.

B. If the building being constructed includes the installation of automatic sprinkler protection, the Fire Protection Sprinkler Subcontractor shall activate the sprinkler system as soon as practically possible during the construction of the building and maintain its operation throughout the remaining portions of the building's construction.

1. Multi-story Buildings

a. The sprinkler system standpipes shall be installed and placed in service no more than two (2) floors below the completion of each elevated floor slab and maintained as construction progresses in such a manner that they are always ready for fire protection use.

   (1) The standpipes shall be provided with Siamese Fire Department connections on the outside of the building structure, at ground or street level. They are to be conspicuously marked.

   (2) A minimum of one (1) standard hose outlet at each floor shall be provided.

2. Demolition or Alteration of Existing Buildings

a. The existing automatic sprinkler installations shall be retained in service as long as possible.

b. The operation and inspection of the sprinkler control valves shall be the sole responsibility of the Fire Protection Sprinkler Subcontractor. Should the project not employ a Fire Protection Sprinkler Subcontractor, the Contractor shall designate the personnel authorized to operate and inspect the sprinkler control valves.

   (1) The control valves are to be inspected daily at the close of work to ascertain and ensure that the sprinkler system is in service.

c. Modifications of the existing sprinkler system(s) to permit demolition, alteration, or additions shall be performed in such a manner as to ensure the most expeditious return to automatic sprinkler service as possible.

END OF SECTION
SECTION 01551 - ACCESS AND HAUL ROADS, PARKING AND TRAFFIC REGULATIONS

Part 1 - General

1.01 Access Roads

A. Whenever the Subcontractor's operations obstruct or endanger a used traffic lane, and no marked detour has been provided, he shall furnish a flagman to direct traffic through or around the congested area. The Contractor shall have the right to require additional flagmen as he may deem necessary. Permits required shall be the Subcontractor's obligation and responsibility.

B. The Subcontractor shall neither shut off nor unnecessarily interfere with Project operations or vehicular access on the property without the consent of the Contractor.

C. The Subcontractor shall be responsible for removal of any debris, dirt, etc., which is lost outside the construction site on City streets or on private property.

1.02 Construction Parking

A. Subcontractor's employees shall park their cars on the site where directed by the Contractor. Location may vary during the course of construction.

B. If onsite parking is not available (as determined by Contractor), the Subcontractor is responsible for providing offsite parking facilities for it's workers, including costs of same.

1.03 Traffic Regulations

A. Construction traffic shall obey all posted traffic regulations at all times and shall proceed so as not to interfere with normal operations of adjacent facilities. Wherever crossing or traffic guards are required, such personnel shall be furnished by the Subcontractor.

1.04 Temporary Signs

A. Temporary traffic signs will be erected by the General Contractor.

END OF SECTION
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SECTION 01563 - WATER CONTROL

Part 1 - General

1.01 Related Requirements Specified Elsewhere

A. The Subcontractor shall protect excavations, trenches, and structures from damage by rain water, ground water, backing-up of drains and sewers and from all other water. Provide pumps, well points, equipment and enclosures to provide protection for the work.

END OF SECTION
SECTION 01580 - PROJECT IDENTIFICATION AND SIGNS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. The Contractor will:
   1. Furnish, install and maintain project identification sign.
   2. Provide temporary on-site informational signs to identify key elements of construction facilities.
   3. Remove signs on completion of construction.
   4. Allow no other signs to be displayed without specific prior written approval of Contractor.

END OF SECTION
SECTION 01590 - FIELD OFFICES AND SHEDS

Part 1 - General

1.01 Requirements Included

A. The Subcontractor shall:

1. Furnish, install and maintain temporary field offices as required during his entire construction period.

2. Furnish, install and maintain storage and work sheds needed for construction.

3. Furnish all temporary utilities including heat, air conditioning, lighting, power and telephone required for his field office or shed.

4. At completion of work, remove field offices, sheds and contents.

B. The Contractor will:

1. Furnish, install and maintain temporary field offices for the use of the Contractor.

2. At completion of work, remove field office.

3. Field offices will have heat, air conditioning, lighting, power and telephones.

1.02 Related Requirements

A. Summary of Work: Refer to each individual Construction Package.

B. Section 01510: Temporary Utilities

C. Section 01551: Access Roads and Parking

D. Section 01620: Storage and Protection

1.03 Other Requirements

A. Prior to installation of offices and sheds, consult with Contractor on location, access and related facilities. Allocation of space for on site sheds, offices or storage, if available, will be at the discretion of the Contractor.
1.04 Requirements For Facilities

A. Construction:
   1. Structurally sound, weathertight, with floors raised above ground.
   2. Temperature transmission resistance: Compatible with occupancy and storage requirements.
   3. At Subcontractor's option, portable or mobile buildings may be used.
      a. Mobile office, when used, are to be designed solely for office use.
      b. Do not use mobile home for living quarters.

B. Field office and facilities for Contractor.
   1. Size: As required for general use and to provide space for project meetings.
   2. Lighting and temperature control: 50 footcandles at desk top height; automatic.
   3. Telephone: One direct line instrument.
   4. Furnishings in meeting area:
      a. Conference table and chairs for at least eight persons.
      b. Racks and files for project Record Documents in, or adjacent to, the meeting area.
   5. One outdoor type thermometer.

C. Subcontractor's Field Office and Facilities:
   1. Provide size, furnishings and utilities as required to meet the needs of his respective trade.

D. Storage Sheds:
   1. To requirements of various trades.
   2. Dimensions: Adequate for storage and handling of products.
   3. Ventilation: Comply with specified and code requirements for products stored.
   4. Heating: Adequate to maintain temperatures specified in respective Sections for products stored.

1.05 Use of Permanent Facilities

A. When permanent facilities are enclosed and habitable, with operable mechanical and
electrical facilities, certain offices may be relocated into the building, with Contractor's permission.

1. Consult with Contractor; obtain written permission from the Contractor prior to use of selected areas.

2. Provide specified furnishings, equipment and services.

Part 2 - Product

2.01 Materials, Equipment, Furnishings

A. May be new or used, but must be serviceable, adequate for the required purpose, and must not violate applicable codes or regulations.

Part 3 - Execution

3.01 Preparation

A. Fill and grade sites for temporary structures to provide surface drainage.

3.02 Installation

A. Construct temporary field offices and storage sheds on proper foundations; provide connections for utility services.

1. Secure portable or mobile buildings when used.

2. Provide steps and landings at entrance doors.

B. Mount thermometer at convenient outside location, not in direct sunlight.

3.03 Maintenance and Cleaning

A. Provide periodic maintenance and cleaning for Subcontractors temporary structures, furnishings, equipment and services.
3.04 Removal

A. Remove temporary field offices, contents and services at the time no longer needed.

B. Remove storage sheds when no longer needed.

C. Remove foundations and debris; grade site to required elevations and clean the area.

END OF SECTION
SECTION 01600 - MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.1 REQUIREMENTS

A. Material and equipment incorporated into the work:
   1. Conform to applicable specifications and standards.
   2. Comply with size, make, type and quality specified, or as specifically approved in writing by the Architect/Engineer.
   3. Manufactured and fabricated products:
      a. Design, fabricate and assemble in accordance with the best engineering and shop practices.
      b. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
      c. Two or more items of the same kind shall be identical, by the same manufacturer.
      d. Products shall be suitable for service conditions.
      e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
   4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.2 REUSE OF EXISTING MATERIAL

A. Except as specifically indicated or specified, materials and equipment removed from the existing structure shall not be used in the completed work.

1.3 MANUFACTURER'S INSTRUCTIONS

A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two copies to Contractor and two copies to Architect/Engineer, through the Contractor.
   1. Maintain one set of complete instructions at the jobsite during installation and until completion.

B. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.
   1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Contractor for further instructions.
   2. Do not proceed with work without clear instructions.

C. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

END OF SECTION
SECTION 01620 - STORAGE AND PROTECTION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Provide secure storage and protection for products to be incorporated into the work, and maintenance and protection for products after installation and until completion of the work. Consult with Contractor for location of storage.

1.2 STORAGE

A. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.

B. Store products subject to damage by the elements in substantial weathertight enclosure.
   1. Maintain temperatures within the ranges required by manufacturer's instructions.
   2. Provide humidity control for sensitive products, as required by manufacturer's instructions.
   3. Store unpacked products on shelves, in bins or in neat piles, accessible for inspection.

C. Exterior Storage:
   1. Provide substantial platforms, blocking or skids to support fabricated products above ground prevent soiling or staining.
      a. Cover products, subject to discoloration or deterioration from exposure to the elements, with impervious sheet coverings. Provide adequate ventilation to avoid condensation.
   2. Store loose granular materials on solid surfaces such as paved areas, or provide plywood or sheet materials to prevent mixing with foreign matter.
      a. Provide surface drainage to prevent flow or ponding of rainwater.
      b. Prevent mixing of refuse or chemically injurious materials or liquids.

D. Arrange storage in a manner to provide easy access for inspection, and access to all parts of the Project.

E. Remove or relocate stored materials that encumber other Subcontractor's Work or the Owner's operations.

F. Be cautious and not load the structure with weight that might cause damage or endanger the structure.

G. When any room of the Project is used as a shop, storeroom, etc., the Subcontractor will be held responsible for any repairs, patchings, or cleaning arising from such use. Coordinate with the Contractor for space usage of this nature.

H. If stored materials and equipment obstruct the progress of any portion of the Work, materials and/or equipment shall be removed or relocated by the Subcontractor as may be directed by the Contractor, without reimbursement of cost. In the event the Subcontractor fails or refuses to comply with this request within a reasonable time, but not more than twenty-four (24) hours, the Contractor will follow-up with a written notice and will have the items moved to the satisfaction of
the Contractor and back-charge the Subcontractor. The Contractor shall not be responsible for damages or expenses resulting from said move.

1.3 MAINTENANCE OF STORAGE

A. Maintain periodic system of inspection of stored products on a scheduled basis or ensure that:
   1. The state of storage facilities is adequate to provide required conditions.
   2. Required environmental conditions are maintained on a continuous basis.
   3. Surfaces of products exposed to the elements are not adversely affected.
      a. Weathering of products, coatings, and finishes is acceptable under requirements of Contract Documents.

1.4 PROTECTION AFTER INSTALLATION

A. Provide protection of installed products to prevent damage from subsequent operations. Remove when no longer needed, prior to completion of the Work.

B. Provide coverings to protect finished surfaces from damage.
   1. Cover projections, wall corners, and jambs, sills and soffits of openings, in areas used for traffic and for passage of products in subsequent work.
   2. Protect finished floors and stairs from dirt and damage:
      a. In areas subject to foot traffic, secure heavy paper, sheet goods, or other materials in place.
      b. For movement of heavy materials, lay planking or similar materials in place.
      c. For storage of products, lay tight wood sheathing in place.
      d. Cover walls and floor of elevator cabs, and surfaces of elevator car doors, used by construction personnel.

C. Waterproofed and roofing surfaces
   1. Prohibit use of surfaces for traffic of any kind, and for storage of any products.
   2. When some activity must take place in order to carry out the Subcontract, obtain recommendations of the installer for protection of the surface, subject to approval of Contractor.
      a. Install recommended protections; remove on completion of that activity.
      b. Restrict use of adjacent unprotected areas.

D. Lawns and Landscaping
   1. Prohibit traffic of any kind across planted lawn and landscaped areas.

END OF SECTION
SECTION 01630 - SUBSTITUTIONS AND PRODUCT OPTIONS

Part 1 - General

1.01 Requirements Included

A. Furnish and install the products specified, under the options and conditions for substitutions stated in this Section.

B. Related Requirements:

   1. Other Requirements: Conditions of the Subcontract
   2. Allowances: Section 01020 as applicable.
   3. Independent testing laboratory services: Section 01410
   4. Record Documents: Section 01720

1.02 Products List

A. Within 10 days after the award of the Contract, submit through the Contractor to the Architect/Engineer, five (5) copies of a complete list of major products which are proposed for installation.

B. Tabulate the products by Specification Section title and number.

C. For products specified only by reference standards, list for each such product:

   1. Name and address of the manufacturer.

   2. Trade name.

   3. Model or catalog designation.

   4. Manufacturer's data.

      a. Reference standards.

      b. Performance test date.

1.03 Subcontractor's Options

A. For products specified only by reference standard, select any product meeting that standard, by any manufacturer.

B. For products specified by naming one or more products or manufacturers and stating "or equal", the Subcontractor must submit a request as for substitutions, for any product or manufacturer not specifically named.

1.04 Substitutions
A. Within a period of 10 days after execution of the Subcontract, the Architect/Engineer will consider formal requests from the Subcontractor for substitution of products in place of those specified.

1. After the end of that period, requests will be considered only in case of product unavailability beyond the control of the Subcontractor.

B. Submit a separate request for each substitution. Support each request with:

1. Complete data substantiating compliance of the proposed substitution with requirements stated in contract documents:
   a. Product identification, including manufacturer's name and address.
   b. Manufacturer's literature; identify:
      1. Product description
      2. Reference standards
      3. Performance and test data

2. An itemized comparison of the proposed substitution with the product specified; list any significant variations.

3. Data relating to any changes in the construction schedule.

4. Effects of the substitution on each separate contract of the project.

5. List any changes required in other work or products.

6. Accurate cost data comparing the proposed substitution with the product specified.
   a. The amount of the net deduction from the Contract Sum, if any.

7. Designation of any required license fees or royalties.

C. Substitutions will not be considered for acceptance when:

1. They are indicated or implied on shop drawings or product data submittals without a formal request from the Subcontractor.

2. They are requested directly by a Subcontractor or supplier.

3. The acceptance will require substantial revision of contract documents.

D. Substitute products shall not be ordered or installed without written acceptance of the Architect/Engineer.

1.05 Subcontractor’s Representation

A. In making a formal request for a substitution the Subcontractor represents that:

1. Subcontractor has investigated the proposed product and has determined it is equal to or superior to all respects to that specified.

2. Subcontractor will provide the same warranties or bonds for the substitution as for the product specified.

3. Subcontractor will coordinate the installation of an accepted substitution into the Work to be complete in all respects.

4. Subcontractor waives all claims for additional costs caused by the substitution which may subsequently become apparent.

5. The Subcontractor shall be responsible for all direct or indirect costs associated with the acceptance of the approved substitution.

1.06 Architect/Engineer Duties

A. Review Subcontractor’s requests for substitutions with reasonable promptness.

B. Notify Subcontractor, in writing, of the decision for acceptance or rejection of the request for substitution.

END OF SECTION
SECTION 01700 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Comply with requirements stated in Subcontract and in specifications for administrative procedures in closing out the work.

1.2 SUBSTANTIAL COMPLETION

A. When Subcontractor considers the work is substantially complete, he shall notify, through the Contractor to Architect/Engineer that the work or designated portion thereof, is substantially complete.

B. Within a reasonable time after receipt of such notice, Contractor and Architect/Engineer will make an inspection to determine the status of completion.

C. Should Contractor determine that the work is not substantially complete:
   1. Contractor will promptly notify the Subcontractor in writing, giving the reasons therefore.
   2. Subcontractor shall remedy the deficiencies in the work, and notify the Contractor to the Architect/Engineer.
   3. Contractor and Architect/Engineer will reinspect the work.

1.4 FINAL INSPECTION

A. When Subcontractor considers the work is complete, he will notify the Contractor.

B. Contractor and Architect/Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such notice.

C. Should Contractor and Architect/Engineer consider that work is incomplete or defective:
   1. Contractor and Architect/Engineer will promptly notify the Subcontractor in writing, listing the incomplete or defective work.
   2. Subcontractor shall take immediate steps to remedy the stated deficiencies, and notify the Contractor that the work is complete.
   3. Contractor and Architect/Engineer will reinspect the work.

D. When the Architect/Engineer finds that the work is acceptable under the Contract Documents, he shall request the Subcontractor to make closeout submittals.

1.5 REINSPECTION FEES

A. Should Contractor and Architect/Engineer perform reinspections due to failure of the work to comply with the claims of status of completion made by the Subcontractor:
   1. The Contractor will deduct the amount of such reinspections from the final payment to the Subcontractor.

1.6 FINAL APPLICATION FOR PAYMENT
A. Subcontractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the Subcontract.

B. Final payment is contingent upon satisfaction of all Contractor requirements including submittal of warranties, guarantees, and maintenance information as specified and in a form acceptable to the Contractor.

END OF SECTION
SECTION 01710 - CLEANING

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Execute cleaning, during progress of work, and at completion of the work, as required by General Conditions.

1.2 RELATED REQUIREMENTS

A. Conditions of the Contract.
B. Each Specification Section: Cleaning for specific products or work.

1.3 DISPOSAL REQUIREMENTS

A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.1 DURING CONSTRUCTION

A. Subcontractor shall execute periodic cleaning to keep the work, the site and adjacent properties free from accumulations of his waste materials, rubbish and windblown debris, resulting from his construction operations.
B. Contractor will provide on-site container, at grade level, for the collection of waste materials, debris, and rubbish.
C. Subcontractor is responsible for disposal of rubbish and debris in container provided by Contractor. There will be no trash chute on this project.

3.2 FINAL CLEANING

A. Ventilating Systems:
1. Mechanical Subcontractor shall clean permanent filters and replace disposable filters if units were operated furring construction.
2. Clean ducts, blowers and coils if units were operated without filters during construction.

B. Contractor will assume responsibility for final cleaning of interior and exterior surfaces of buildings.

END OF SECTION
SECTION 01714 - HAZARD-COMMUNICATION-PROGRAM

Part 1 - General

1.01 Each Subcontractor must develop a specific written hazard communications program in compliance with State and Federal OSHA regulations. The Subcontractors program must be kept at the Project site and kept current by the Subcontractor.

1.02 As part of the hazard communications program each Subcontractor must:
   
   A. provide a chemical inventory list on site.
   B. Provide information on chemical labeling on site.
   C. Provide information on other forms of hazardous substance warnings on site.
   D. Provide material safety data sheets (MSDS) on site.
   E. Provide information on the State and Federal OSHA hazardous communications standard requirements on site.
   F. Establish a method to communicate with other Subcontractors on the site regarding hazardous substances.
   G. Properly train all employees before they work with hazardous substances/chemicals and when new substances/chemicals are introduced on the work site.

1.03 The Contractor shall set aside an area in its trailer or site office which may be used by the Subcontractor as the site's Hazardous Materials Information Center (HMIC) for the communication and storage of information regarding hazardous materials used on the site. All Subcontractors must keep their written hazard communication programs and all material safety data sheet on file in the HMIC. In providing said area, the Contractor assumes no responsibility for providing, updating, or disseminating of Subcontractors hazardous materials information and data, as required by regulations.

Part 1 - General

1.01 Requirements Included

   A. Each Subcontractor shall be responsible for the identification of and proper handling and/or disposal of his own hazardous waste.

   B. No material identified as hazardous waste shall be placed in the Contractor's dumpster.
Part 2 - Products

2.01  Material

A.  Hazardous waste shall be classified by the regulations published by the U.S. Environmental Protection Agency and by the Land Pollution Control Division of the State Board of Health.

B.  Each Subcontractor shall have a written hazard communication program if employees use or are exposed to hazardous materials, and shall comply with OSHA Regulation 29 CRF 1926.59.

Part 3 - Execution

3.01  Identification

A.  Each Subcontractor shall maintain an inventory of all chemicals stored on the jobsite.

B.  All materials classified as hazardous shall be clearly labeled as being hazardous.

C.  Subcontractor shall obtain a Material Safety Data Sheet for each chemical on the jobsite. Copies of the MSDS shall be submitted to the Contractor and kept at the Hazardous Information Center.

D.  Subcontractor shall adequately train his workmen in the proper handling and use of all chemicals used on the jobsite.

E.  All hazardous waste shall be lawfully disposed of by the Subcontractor through a Licensed Hazardous Waste Hauler. A copy of the Uniform Hazardous Waste Manifest form shall be submitted to the Contractor.

F.  All hazardous waste shall be disposed of at an Approved Hazardous Waste Management Facility.

G.  The Subcontractor shall be responsible for all costs involved in the clean-up of improperly disposed of hazardous waste.

END OF SECTION
SECTION 01715 - HAZARDOUS WASTE

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Each Subcontractor shall be responsible for the identification of and proper disposal of his own hazardous waste.

B. No material identified as hazardous waste shall be placed in the Contractor’s dumpster.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Hazardous waste shall be classified by the regulations published by the U.S. Environmental Protection Agency and by the Land Pollution Control Division of the State Board of Health.

B. Each Subcontractor shall have a written hazard communication program if employees use or are exposed to hazardous materials, and shall comply with OSHA Regulation 29 CFR 1926.59.

PART 3 - EXECUTION

3.1 IDENTIFICATION AND DISPOSAL

A. Each Subcontractor shall maintain an inventory of all chemicals stored on the jobsite.

B. All materials classified as hazardous shall be clearly labeled as being hazardous.

C. Subcontractor shall obtain a Material Safety Data Sheet for each chemical on the jobsite. Copies of the MSDS shall be submitted to the Contractor and kept at the Hazardous Information Center.

D. Subcontractor shall adequately train his workmen in the proper handling and use of all chemicals used on the jobsite.

E. All hazardous waste shall be lawfully disposed of by the Subcontractor through a licensed Hazardous Waste Hauler. A copy of the Uniform Hazardous Waste Manifest form shall be submitted to the Contractor.

F. All hazardous waste shall be disposed of at an approved Hazardous Waste Management Facility.

G. No materials classified, as hazardous waste shall be placed in the Contractor’s dumpster.

H. The Subcontractor shall be responsible for all costs involved in the clean up of improperly disposed of hazardous waste.

END OF SECTION
SECTION 01720 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUBMITTAL

A. At Contract closeout, deliver Record Documents to the Contractor.

B. Accompany submittal with transmittal letter in duplicate, containing:
   1. Date.
   2. Project title and number.
   3. Subcontractor's name and address.
   4. Title and number of each Record Document.
   5. Signature of Subcontractor or his authorized representative certifying that the information is true and correct.

C. In addition to above, provide complete set of reproducible drawings, reflecting all changes, additions and deletions to the Work, and representing accurate as-built condition of all Work performed by the Subcontractors identified by the Contractor.

END OF SECTION
SECTION 01740 - WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Compile specified warranties and bonds.

B. Warranty period shall be one (1) year from Substantial Completion date unless noted otherwise in the specifications.

1.2 SUBMITTAL REQUIREMENTS

A. Assemble warranties and bonds executed by each of the respective manufacturers, suppliers, and Subcontractors.

B. Number of original signed copies required: Two each.

C. Table of contents: Neatly typed, in orderly sequence, provide complete information for each item.
   1. Product or work item.
   2. Firm with name of principal, address and telephone number.
   4. Date and beginning of warranty or bond.
   5. Date on which warranty or bond ends.

END OF SECTION
SECTION 01810 - SOIL INVESTIGATION REPORT

Part 1 - General

1.01 General

A. Testing borings and subsurface explorations have been made on the site. These borings and explorations have been made and recorded in the usual manner with reasonable care and accuracy. The Owner does not warrant, or guarantee that the conditions and/or materials actually encountered in the prosecution of the work and/or any part thereof will be the same as shown on the test borings and explorations, the recordings, or any part of them; and if the Subcontractor relies, for any purpose, upon said information, he does so at his own risk.

B. It shall be the Subcontractor's responsibility to familiarize himself with said report and recommendations.

C. The above specific reference is not meant to be inclusive of areas the Subcontractor is required to be familiar with in regards to the Project site subsurface condition. It is provided only for the Subcontractor's information and shall in no case be construed to limit or release the Contractor of his responsibilities to complete the work.

D. The Subcontractor shall be responsible for complying with the provisions as specified in Section 01410 of these specifications.

1.02 Existing Subsurface Lines

A. All known subsurface lines, pipe, conduits and structures are shown on the plans and profiles. These lines are shown based upon the best available plans and maps. The locations have not been verified by test pits and the Contractor assumes no responsibility for the accuracy of the drawings. In any area where the Subcontractor must make connections or cross existing lines, it shall be his responsibility to test pit the line and verify the locations to his satisfaction. In the event the lines are not found located as shown on the plans, the Subcontractor shall notify the Contractor so that an evaluation can be made as to the magnitude and method of any adjustments to the plans.

B. The Subcontractor shall be solely responsible for any damage to any underground or above ground lines encountered in any manner during construction. When crossing and working in the vicinity of existing lines, it will be the Subcontractor's responsibility to properly support and maintain the operation of the lines. Extreme care must be exercised in excavation and refill operations. The Subcontractor will correct, at his own expense, any damage caused to existing lines.
C. The Subcontractor shall notify the Contractor in writing for permission three (3) days prior to excavation for location of existing lines. Test pit excavations will not be performed unless the Contractor and representatives of the appropriate utility are present. Coordinate with appropriate utility companies for any questionable conditions.

END OF SECTION
SECTION 02070

DESTRUCTION GENERAL PROCEDURES

PART 1 - GENERAL

1.0 SUMMARY

A. Section Includes:
   1. Coordination, protection and inspection required to remove designated portions of building structure required to accommodate new construction.
   2. Removal, storage, and protection of existing items to be salvaged.
   3. Provide coordination required so that all utilities to be removed are disconnected before demolition is started. Contractor will shut off building utilities when necessary.
   4. Location and protection of all utilities not affected by demolition operations.
   5. Description of modifications required for dock leveler pit.

B. Specified in Other Sections:
   1. Specific requirements for reinstallation work.

C. Related Work Not in These Specifications:
   1. Removal of pipes, conduits, ducts, electrical fixtures, fans, and other mechanical and electrical work.
   2. Reconditioning and installation of salvaged items in new work.
   3. Removal of below grade structures.
   4. Site clearing of pavements and landscaping.

1.1 DESCRIPTIONS

A. Dock Leveler Installation in existing construction:
   1. Replacement of existing leveler: Remove existing leveler and pit, if necessitated by new leveler requirements.
   2. New leveler installation: Saw cut existing concrete floor slab as specified in Section 02072 and saw cut precast panel as specified in Section 02073 at the exterior to fit new leveler installation.
   3. Demolish and remove floor slab and excavate fill to depth required for the new leveler pit.

1.3 QUALITY ASSURANCE

A. The following codes and standards are incorporated as part of the work of this and other sections specific to the work.
   1. Applicable Building Code and referenced construction and design standards.
   2. NFPA Std. No. 241 "Safeguarding Building Construction & Demolition Operations".

B. Employ skilled workmen to perform cutting and patching work.

C. Visual Requirements: Do not cut and patch exposed work in a manner that lessens the building’s aesthetic qualities, nor that results in visual evidence of cut and patch work.
1.4 JOB CONDITIONS

A. Existing Conditions: Maintain adequacy of structure during demolition. Contractor is not responsible for actual condition of work to be demolished.

B. Damages: Promptly repair damages caused to adjacent facilities by demolition work at no cost to Contractor.

C. Occupancy: Where the facility is occupied during demolition, conduct work to minimize disruption of Tenant’s normal operations.

D. Traffic: Conduct demolition and debris removal with minimum interference to roads, streets, walks and adjacent facilities. Provide alternate routes around closed or obstructed traffic ways.

E. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

F. Fire Safety:
   1. Do not use flame cutting or other flame tools without Contractor’s written permission. If permitted provide and maintain fire-extinguishing equipment as required.
   2. Explosives: Use of explosives is not permitted.

G. Environmental Controls: Limit dust and dirt rising and scattering in air to lowest practical level. Comply with all governing regulations pertaining to environmental protection.
   1. Do not use water when it may create ice, flooding, pollution, or other hazardous conditions.
   2. If dirt or dust from demolition becomes excessive, the Contractor reserves the right to hire janitorial service for cleaning and deducting cost of such cleanup from the work.
   3. Provide enclosed dust chutes with control gates at each floor to carry debris to level of the disposal container. Provide cover over top of container to control dust. Provide overhead protection and barricades against falling debris. Use of dust chutes must be approved by Contractor.

H. Utility Services: Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.

1.5 SEQUENCING AND SCHEDULING

A. Coordinate demolition with Owner’s operations in occupied portions of existing building.

B. Where directed by the Contractor perform all work that disrupts operations on an overtime basis or other agreed upon times.

PART 2 - PRODUCTS
2.1 MATERIALS

A. For materials not specified in sections specific to the operation use materials and products identical to existing materials and as needed to match appearance and other performances.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect area of work, prior to demolition. Notify Contractor in writing of any conditions which could be misconstrued as damage resulting from demolition work.

3.2 PREPARATION

A. Provide shoring, bracing, or support to prevent movement, settlement or collapse of structures to be demolished and adjacent facilities to remain. Sub-contractor is responsible for the structural adequacy of his work.
   1. If safety of structure appears to be endangered, immediately support structure until determination is made for continuing operations.

B. Protection: Protect other work during cutting and patching to prevent damage.
   1. Provide protection from adverse weather condition for that part of project that may be exposed during cutting and patching operations.
   2. Provide protection for flooring in access and work areas.
   3. Protect from soiling or damaging equipment, fixtures and other items that remain in areas under demolition.

C. Locate, identify, stub off, and disconnect utility services that are not indicated to remain.

3.3 CUTTING

A. Cut the work using methods least likely to damage work to be retained or adjoining work.

B. Cut holes and slots neatly to size required with minimum disturbance of adjacent work.

C. Cut or drill from exposed or finish side into concealed surfaces.

D. Perform cutting by sawing, drilling, or grinding, not by hammering or chopping.

E. Cut and drill concrete or masonry with masonry saw or core drill.

F. Comply with Construction Manager's requirements, where cutting and patching requires excavation and backfilling.
G. Bypass utility services such as pipe and conduit before cutting where such utility services are to be removed, relocated, or abandoned. Cut off conduit and pipe in walls or partitions that are to be removed. After bypass and cutting, cap, valve, or plug and seal tight the remaining portion of pipe or conduit.

H. Identify existing hazardous substances or conditions exposed during cutting to the Construction Manager for decision or remedy.

3.4 PATCHING

A. Patch adjacent work disturbed by demolition in a manner that is durable and with seams which are as invisible as possible. Comply with tolerances required for new work.
   1. Where possible, extend finish restoration into retained adjoining work where necessary to eliminate evidence of patching and refinishing.
   2. For continuous surfaces, refinish to nearest intersection.

B. Where patch occurs in smooth painted surface, extend final paint coat over entire unbroken surface containing patch after patched area has received prime and base coat. All painting to be done per Section 09900.

C. For an assembly, refinish entire unit.

D. Fit work airtight and, on exterior, watertight to penetrations.

E. Maintain integrity of wall, ceiling, and floor construction; completely seal voids.

F. At penetrations of fire rated construction, firestop voids to maintain integrity of rating and protection.

3.5 SALVAGE MATERIALS

A. Salvage for reuse where designated: Carefully remove items, clean, and store for reinstallation. Sub-contractor is responsible for damage not brought to the Contractor’s attention prior to removal.

B. Salvage for Contractor where designated: Carefully remove indicated items, clean, store, and deliver to Contractor’s designated storage area on the Contractor’s property and obtain receipt.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove debris, rubbish and other materials resulting from demolition operations from building site on a daily basis. Transport and legally dispose of materials off site.
   1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution. Notify Contractor promptly of materials found.
2. Burning of removed materials is not permitted on project site.

B. Sub-contractor's Salvage: Remove items not salvaged for reuse from site as they are removed. Storage or sale of removed items on site will not be permitted.

C. Promptly remove debris to avoid imposing excessive loads on supporting walls, floors, roofs or framing.

3.7 CLEANUP AND REPAIR

A. Upon completion of demolition remove equipment and demolished materials from site. Remove protection and leave interior areas to receive new work broom clean.

B. Repair excessive demolition or accidental damage. Return remaining structures and surfaces to original condition. Repair adjacent construction or surfaces soiled or damaged by selective demolition work. Clean all areas and surfaces unaffected by new work or unintended for demolition to original condition using any approved means and methods.

END OF SECTION
SECTION 02072
CAST-IN-PLACE CONCRETE MODIFICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Removal of foundations, structural concrete, and slabs on grade.
   2. Core drilling of concrete structures.
   3. Dowels embedded in existing concrete.
   4. Patching of existing concrete damaged by demolition.

B. Specified in Other Sections:
   1. Coordination, protection and inspection requirements.
   2. Removal, storage and protection of existing items to be salvaged.

C. Related Work Not in These Specifications:
   1. Removal of below grade structures.
   2. Site clearing pavements and landscaping.

1.2 RELATED DOCUMENTS

A. Use this section in conjunction with Section 02070 and other Sections applicable to new materials and construction.

1.3 JOB CONDITIONS

A. Unless otherwise directed by the Contractor, during demolition operations wet down work thoroughly to prevent dust and dirt from rising; provide water lines for this purpose; furnish connections that may be required at a location approved by the Contractor.

B. Where water use is not permitted by Contractor construct temporary solid dustproof partitions to separate areas where noisy or extensive dirt or dust operations are performed.
   1. Provide dustproof doors where required.

1.4 SEQUENCING AND SCHEDULING

A. Notify Contractor’s superintendent 24 hours prior to any sawing, cutting or core drilling.

B. Perform all disruptive work after business hours on an overtime basis.

PART 2 - PRODUCTS (Not applicable)

2.1 MATERIALS

A. Concrete Patching Material:
2. Aggregate: ASTM C 33 or ASTM C 404; uniformly graded sand, clean.
3. Water: Clean and potable.
4. Epoxy Bonding Adhesive: ASTM C 881 types IV or V, two-part epoxy adhesive suitable for use on dry or damp surfaces.
5. Cleaning Agent: Commercial muriatic acid.

B. Slab-on-Grade Replacement:
1. Portland Cement: ASTM C150, Type III high early strength.
2. Aggregate: ASTM C33, uniformly graded normal weight weathering, type, and class subject to local site conditions and availability of aggregate type.
3. Water: Clean and potable.
4. Admixtures:
   a. Air-entraining admixture: ASTM C260, for use on exterior slabs and sidewalks.
   b. Others as approved by Contractor for local site conditions.
5. Vapor Barrier: ASTM E 1745. Polyethylene sheet (or roll), min. 6 mil thickness or as shown on drawings.
6. Curing Compound: Clear, waterborne, membrane forming. ASTM C309 Type 1, Class B, 18 to 22% solids, compatible with concrete type.
7. Mix design strength: Compressive strength: 3000psi at 28 days.

C. Dowels: Deformed Reinforcing Bars - ASTM A 615 grade 60.
   a. Reinforcement Accessories: Bolsters, chairs, spacers, and other devices required for spacing; supporting and fastening reinforcing bars and WWF in place.

D. Epoxy Grout: Two component 100 percent epoxy resin amine cured filled with mineral filler 100 percent passing No. 100 sieve.

PART 3 - EXECUTION

3.1 INSPECTION

A. Do not remove any part of the Work that will leave the remaining Work unstable until adequate temporary bracing and shoring have been provided to prevent movement, settlement or collapse during removal on contiguous material. Sub-contractor is responsible for structural adequacy of his work.
   1. If safety of structure appears to be endangered, immediately support structure until determination is made for continuing operations.

3.2 PREPARATION

A. Locate, identify, stub off and disconnect utility services that are not indicated to remain.
   1. Provide bypass connections as necessary to maintain continuity of service to occupied areas of building. Provide minimum of 72 hours advance notice to Owner if shutdown of service is necessary during change over.
   2. Mark location of disconnected utilities. Identify and indicate capping locations and furnish to Construction Manager.
B. Locate and protect existing utilities using all necessary guards, stakes, flags, warning signs, or other means required to safeguard existing utilities.

3.3 DEMOLITION

A. Demolish construction completely within limits indicated except where portions are indicated to remain.

B. Break up and remove concrete using removal methods that will not crack or structurally disturb adjacent slabs or partitions.

C. Cut concrete foundations with rotary saws and drills prior to removal. Exercise care in use of pneumatic hammer to avoid fracturing material to remain.
   1. Schedule and obtain permission of Owner prior to use of pneumatic hammers within the building during the Owner's normal working hours.

D. Slab Removal: Where adjacent floors are to be retained, score the surfaces to a minimum depth of 2 inches with concrete saw prior to removal, or deeper if necessary to cut wire reinforcing. Cut slab full depth if chipping or undermining of adjacent slab to remain can not be prevented otherwise.

E. Filling Voids:
   1. Grade surface to meet adjacent contours and to provide flow to surface drainage structures.
   2. Completely fill below-grade areas and voids resulting from demolition work.
   3. Provide fill consisting of approved granular fill, gravel or sand, free of trash and debris, stones over 6" diameter.
   4. Placement: Place backfilling materials in layers not exceeding loose depths as follows:
      a. Heavy equipment compaction: 8 inches.
   5. Compact material to not less 98% of maximum standard proctor density at optimum moisture content. For gravel or sand mixtures compact material with not less than two passes of a vibratory compactor.

3.4 DRILLING IN EXISTING CONCRETE

A. Drill holes in existing concrete using power-driven drill and tungsten carbide tipped bit ground to insure against oversize hole.

3.5 DOWELS

A. Drill holes in existing concrete. Clean out holes with air.
   1. Hole Diameter - 1/8" larger dowel diameter
   2. Depth of holes where not shown - 24 times the dowel diameter.
   3. Spacing - As indicated on the drawings. Where spacing is not shown consult with Contractor.

B. Grouting: Thoroughly swab surfaces of hole and embedded portion of dowel with epoxy bond. While surfaces are still wet, fill hole 1/4 fill of epoxy grout. Force dowel into place.
C. Wipe off excess grout and let set for not less than 12 hours at a temperature above 60°F. Where this is impracticable, heat exposed end of dowel to temperature not higher than 150°F, and maintain this temperature for 1 hour.

3.6 SPALLED AND DAMAGED CONCRETE REPAIR

A. Remove all loose material and saw cut to 1/2-inch depth in square or rectangular shape around perimeter of each area to be repaired. Remove all material within saw cut area to minimum depth of 1/2-inch.

B. At exposed reinforcing bars, remove concrete for a distance of 1 inch around the bars. Clean exposed bars and apply heavy coat of rust inhibitive paint.

C. Thoroughly clean concrete surfaces with cleaning agent.

D. Brush coat entire cavity and exposed reinforcing with epoxy resin binder.

E. Apply mortar consistency patching material in maximum 1-inch layers and finish flush matching adjacent surfaces.

3.7 NEW SLAB-ON-GRADE CONSTRUCTION

A. Remove all loose and deleterious material from area to receive new slab.
   1. Include all demolished concrete materials, loose soil, and other foreign materials.

B. Re-grade and re-compact subgrade and granular fill material per paragraph 3.3 E above.

C. Install dowels, vapor barrier (sealing all seams), and reinforcing mesh as required by drawings.

D. Place concrete to thickness indicated and to flush with adjacent slab.
   1. Floor flatness (Ff) min. Ff=25.
   2. Floor levelness (Fl) min. Fl=15.

E. Finish to match existing adjacent slab or as indicated.

F. Provide control joints to building standards or as indicated, using soft cut technology as soon as concrete can be cut.

G. Apply curing compound in accordance with manufacturer’s recommendations as soon as possible after finishing.

3.8 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from site all broken concrete resulting from demolition operations.

B. Existing concrete which has been broken into small pieces, 3” and smaller may be used in compacted fills required by the construction.
C. Cementitious waste material may be disposed in designated on-site area only if approved by the Contractor.

END OF SECTION
SECTION 02073

PRECAST CONCRETE MODIFICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Cutting and enlarging openings in existing hollow core concrete panels.
   2. Patching of cores in precast.

B. Specified in Other Sections:
   1. Coordination, protection and inspection requirements.
   2. Removal, storage and protection of existing items to be salvaged.

C. Related Work Not in These Specifications:
   1. Modifications to precast floor deck.

1.2 RELATED DOCUMENTS

A. Use this section in conjunction with Section 02070 and other Sections applicable to new materials and construction.

1.3 QUALITY ASSURANCE

A. Design Verification: Prior to cutting of precast hire and pay for the services of a registered structural engineer experienced in precast concrete design to verify that the intended cutting will not cause structural failure of the effected element or material supported thereon.
   1. Have engineer contact original manufacturer of precast panel to determine criteria for cutting.
   2. Have engineer prepare drawings and design calculations necessary to provide any reinforcing that may be required for loads to be carried.

B. Loading Dock Modifications: For attaching "Dock Loks" or other loading dock modifications, have structural engineer contact original manufacturer to determine feasibility of using existing panels for support of loading dock equipment.

1.4 JOB CONDITIONS

A. Keep work wet to prevent dust and dirt from rising or construct temporary dustproof partitions to separate areas where noisy or extensive dirt or dust operations are performed.
   1. Provide dustproof doors where required.
   2. Immediately clean any and all sludge or water created during the wet cutting operation from the floor and wall area via wet vac or other sufficient means.

B. On exterior walls provide temporary solid, insulated, weather protected partitions. Maintain so that water leakage or damage does not occur until final construction protects structure and interior of existing building.
C. Provide shoring, bracing, or support to prevent movement, settlement, or collapse of structure, work under demolition, or adjacent work to remain.

1.5 SEQUENCING AND SCHEDULING

A. Notify Contractor’s superintendent 48 hours prior to any sawing, cutting or core drilling.
B. Perform all disruptive work after business hours on an overtime basis.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Non-shrink Mortar: Grout and 50% pea gravel by weight.
   1. Grout: Non-shrink, high strength, non-metallic aggregate type conforming to COC-C-621
   2. Pea Gravel: Natural stone conforming to ASTM C 33 size No. 7.
B. Steel Lintels: ASTM A 36.

PART 3 - EXECUTION

3.1 PREPARATION

A. Do not cut panel until adequate temporary bracing and shoring have been provided to prevent movement, settlement or collapse during removal of panels or contiguous material. Sub-contractor is responsible for structural adequacy of his work.
B. Where size of opening requires supplementary framing, provide structural steel reinforcing required. Contact Contractor to determine exact requirements for size and location.
   1. Any and all supplemental framing and grouting shall be completed prior to any saw cutting operations.

3.2 DEMOLITION

Safety of the workers, property and equipment shall be the highest concern when engaged in this activity.

A. Cut limits of panels with rotary saws to full depth of panel.
   1. All horizontal cuts shall be made prior to any vertical cuts being made.
   2. Drill hole at corners of openings prior to sawing panel.
   3. Wedges shall be used at intervals not greater than every 2 feet.
   4. Threaded rods and screw plates shall be used to secure the cut pieces to the remaining sections until the process of removal is initiated.
   5. Every effort shall be made to secure the panels through the solid web of the panel.
   6. Do not over cut corners of cutout. Trim corners with chain saw with diamond blades.
   7. Section greater than 8’ X 8’ shall be taken out in more than one piece.
8. For door openings cut precast per drawing details.

B. Removal of panel cutout.
   1. Under no circumstances shall human force be used to push or remove cut sections of panel.
   2. Some form of mechanical means shall be used to control the removal, descent and discarding of the cuts. An example may include the core drilling of holes to accommodate the forks of a forklift or Lull to safely lift the part out. Simply pushing the cut panel out will not be permitted when finished concrete is exposed. Pushing and free falling of the cuts shall only be done in a controlled environment where there is no risk of slab or apron damage. In this instance, a 2:1 personnel safety distance ratio shall be used, taking into account grade elevation differences. The 2:1 personnel safety distance shall be marked off with rope or caution tape during the cutting and removal process. Again only a mechanical device shall be used to push the piece out.

C. Filling Cores: Fill cores at heads, jambs, and other voids with nonshrink mortar or grout.
   1. Rout out existing insulation in precast cores to minimum depth equal to maximum outside dimension of core.
   2. Clean annular surface of core of all insulation.
   3. Completely fill cores and voids resulting from demolition work. Use Mortar to fill cores or grout to fill small voids.

3.3 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from site all concrete and debris resulting from demolition operations.

END OF SECTION
SECTION 02074

MASTERY MODIFICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Cutting openings in existing masonry walls.
   2. Removing of Demising walls.
   3. Description of modifications for new door openings in masonry.

B. Specified in Other Sections:
   1. Coordination, protection and inspection requirements.

C. Related Work Not in These Specifications:
   1. Modifications to precast floor deck.

1.2 RELATED DOCUMENTS

A. Use this section in conjunction with Section 02070 and other Sections applicable to new materials and construction.

1.3 JOB CONDITIONS

A. Keep work wet to prevent dust and dirt from rising or construct temporary dustproof partitions to separate areas where noisy or extensive dirt or dust operations are performed.
   1. Provide dustproof doors where required.

B. On exterior walls provide temporary solid, insulated, weather protected partitions. Maintain protection to prevent water leakage or damage until final construction protects structure and interior of existing building.

C. Provide shoring, bracing, or support to prevent movement, settlement, or collapse of structure, work under demolition, or adjacent work to remain.

1.4 SEQUENCING AND SCHEDULING

A. Notify superintendent 48 hours prior to any sawing cutting or core drilling.

B. Perform all disruptive work after business hours on an overtime basis.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel Lintels: ASTM A 36.

B. Mortar: ASTM C 270, Type S., using following materials:
Duke Construction
Interior Finish Master Specification

1. Portland Cement: ASTM C 150, Type I.
2. Hydrated Lime: ASTM C 207, Type S.

C. Block: ASTM C 145 for solid units. Solid units to be 100% solid.

PART 3 - EXECUTION

3.1 PREPARATION

A. Provide temporary needle and shore bracing prior cutting block. Sub-contractor is responsible for structural adequacy of his work.

B. Provide structural steel lintel for support of head of size required for span.
   1. Provide minimum bearing at each jamb of 4" for openings less than 6'-0" wide, and 8" for wider openings. Fill cores below lintel bearing solid with mortar or grout.

3.2 NEW DOOR OPENINGS

A. Cut limits of panels with rotary saws to depth of face shell to form a straight line.

B. Where doorframe does not match width of wall tooth out partial blocks and replace with new solid units to provide square edge corner.

C. Point up joints at corners, openings and adjacent work to provide a neat, uniform appearance. Masonry coursing to align with existing adjacent construction.

3.3 WALL DEMOLITION

A. Demolish construction completely within limits indicated except where portions are indicated to remain.

B. Demolish in small sections. Cut masonry at junctures with construction to remain using power-driven masonry saw or hand tools. Do not use power-driven impact tools.

3.4 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from site all debris resulting from demolition operations.

END OF SECTION
SECTION 02075
METAL FRAMING MODIFICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Additional steel framing for support of equipment.
   2. Removal of existing framing and providing headers for load transfer.
   3. Structural analysis requirements.

B. Specified in Other Sections:
   1. Coordination, protection and inspection requirements.

C. Related Work Not in These Specifications:
   1. Steel framing for platforms and floor construction.

1.2 RELATED DOCUMENTS

A. Use this section in conjunction with Section 02070 and other Sections applicable to new materials and construction.

1.3 DESCRIPTIONS

A. Design all framing and connections for the required dead and superimposed live loads in conformance with AISC Standards for reactions and/or moments shown.
   1. Hire and pay for services of a Registered Professional Engineer licensed to practice in State that the work will be erected to design the work. Submit certification stamped by the engineer attesting that building design meets specified loading requirements, requirements of codes and authorities having jurisdiction at project site, and other requirements specified.

1.4 QUALITY ASSURANCE

A. Design furnish and install steel framing in accordance with the following codes and standards.
   1. AISC - Code of Standard Practice for Steel Buildings and Bridges.
   2. AISC - Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings, including Commentary and Supplements thereto as issued.
   3. AISI "Specifications for the Design of Cold Formed Steel Structural Members".

B. Welding Qualifications: All welds, welding operations, tackers and inspectors shall be fully qualified in accordance with the requirements of the American Welding Society.

1.5 JOB CONDITIONS

A. Obtain Contractor’s approval prior to any welding operations. Maintain suitable fire extinguishers at the location of all welding operations.
B. Do not store materials on structure in manner that might cause distortion or damage to the members or to supporting structures. Repair or replace damaged materials or structures at no additional cost to the Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Structural Steel: Unless otherwise authorized
   2. Steel Plates to be Bent or Cold-Formed: ASTM A 283, Grade "C".

B. Welding Electrodes: AWS A5.1 or A5.5, E70XX.

C. Cold formed Steel: ASTM A 446 for G60 galvanized finish:
   1. 16 gage and heavier: 50,000 psi yield strength.
   2. 18 gage and lighter: 33,000 psi yield strength.

PART 3 - EXECUTION

3.1 INSPECTION

A. Do not remove any part of the Work that will leave the remaining Work unstable until adequate temporary bracing and shoring have been provided to prevent movement, settlement or collapse during removal on contiguous material. Sub-contractor is responsible for structural adequacy of his work.
   1. If safety of structure appears to be endangered, immediately support structure until determination is made for continuing operations.

3.2 FABRICATION

A. Fabricate structural steel in accordance with reference standards and approved shop drawings.

B. Shop paint all other structural steel.
   1. Clean steel in accordance with SSPC SP-3 Power Tool Cleaning.
   2. Immediately after surface preparation, apply structural steel primer to provide a uniform dry film thickness of 2.0 mils.
   3. No sags or runs permitted on steel that will be exposed in the finish work.

3.3 ERECTION

A. Weld connections unless otherwise authorized.
   1. Welding processes shall conform to AWS D1.1

B. Grind smooth all welds exposed to view.

D. Do not use gas-cutting torches in the field for correcting fabrication errors, except on secondary members who are not under stress. Finish gas-cut sections equal to a sheared appearance.
3.4 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from site all removed steel members.

END OF SECTION
SECTION 02078
MILLWORK, WALL AND CEILING MODIFICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Removal of existing ceiling systems.
      a. Temporary removal of existing acoustical ceiling system as required for other work.
   2. Removal of existing partitions.
   3. Removal of existing interior doors and lights.
   4. Removal of cabinetry and finished carpentry.

B. Specified in Other Sections:
   1. Coordination, protection and inspection requirements.
   2. Removal of existing flooring and base.

1.2 RELATED DOCUMENTS

A. Use this section in conjunction with Section 02070 and other Sections applicable to new materials and construction.

1.3 JOB CONDITIONS

A. All work producing noxious odors shall be performed between the hours of 6:00 p.m. - 7:00 a.m. Monday through Friday, or 6:00 p.m. Friday through 7:00 p.m. Sunday.

B. Coordinate access to occupied spaces with Contractor.

C. No openings to space are to be left unsecured.

PART 2 - PRODUCTS

2.1 MATERIALS

A. For materials not specified in sections specific to the operation use materials and products identical to existing materials and as needed to match appearance and other performances.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect area of work prior to demolition. Notify Contractor in writing of any conditions which could be misconstrued as damage resulting from demolition work prior to demolition operations.

3.2 PREPARATION
A. Raise all window blinds prior to beginning work. Verify that walls have been "made safe" by other trades prior to starting work.

B. Prior to removal verify with Contractor’s superintendent whether to salvage, store or dispose.

C. Coordinate removal of existing wall finishes with Contractor. Completely protect all existing finishes to remain with coverings, guards, pads, etc. from beginning or operations through final clean up.

D. Verify that walls have been made safe structurally, electrically, and mechanically before any demolition.

3.3 DEMOLITION

A. Partitions: Remove doors, frames, and windowsills from partition framing and demolish walls.

B. Acoustical Ceilings:
   1. Remove ceiling tile in preparation for work by other trades.
   2. Rearrange ceiling grid for new lighting and HVAC layout.
   3. Replace all damaged "T's". Replace damaged main runners except where caulking and painting will repair minor holes.

C. Where no flooring work is to be performed remove vinyl base in preparation for new wallcovering.

3.4 PATCHING

A. Partition Repairs:
   1. Repair drywall due to installation or removal of work by other trades.
   2. Repair any adjacent work damaged by this trade.
   3. Repair holes and remove all adhesive from exterior window systems where walls are removed to as new condition.
   4. Repair any damage to walls, sills or window mullions, where damaged by doorframe, window or wall removals or modifications.
   5. Use wet sanding for drywall in occupied rooms.

B. Wall Finishes:
   1. Inspect all surfaces to receive patched or new finishes. Report any defect to Contractor before applying finishes.
   2. Blend touch-up on all doors, frames, millwork, window frames and sills to match existing.
   3. Prep existing walls to receive new finishes.
   4. Where wallcovering is to be installed over previnyled panels, screw panels down tight to studs. Apply reinforcing tape when filling seams. Panels to be skimmed as required to receive new finish.
   5. Wherever openings are cut in existing walls, relay existing wallcoverings. (i.e. laydown vinyl around new entry or exit doors.)
6. Where existing walls utilize "cap" style head track, new construction should be consistent with existing.
7. Patch and repair floors where walls have been removed in preparation for new finishes.
8. Door saddles to be supplied at doors leading to public areas must match floor in public areas. Base must be installed in public areas to complete "finished product".
9. When removing wall covering, walls are to be returned to paintable surface. Walls shall be skim coated where required.

C. Replace damaged ceiling tile. Install new tile as needed to complete ceiling. Confine reused material to individual rooms.
   1. Remove existing pads within the areas to be repadded.
   2. Reposition any displaced sound insulation.

3.5 SALVAGE MATERIALS

A. Remove doors, frames, integral sidelight and place as directed by Contractor. Remove cabinetry and millwork, place where directed by Contractor.

B. Coordinate reuse of doors, frames, hardware, and cabinetry with Contractor.

C. Coordinate with Contractor removal/reinstallation of glass.

D. Protect salvaged material until reuse.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove drywall partition materials from building site on a daily basis.

B. Transport and legally dispose of all materials not salvaged for reuse off site.

END OF SECTION
SECTION 02079
FINISH FLOORING REMOVALS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Remove existing flooring and base.

B. Specified in Other Sections:
   1. Coordination, protection and inspection requirements.
   2. Removal of partitions, doors and lights cabinetry and millwork.

1.2 RELATED DOCUMENTS

A. Use this section in conjunction with Section 02070 and other Sections applicable to new materials and construction.

1.3 JOB CONDITIONS

A. All work producing noxious odors shall be performed between the hours of 6:00 p.m. - 7:00 a.m. Monday through Friday, or 6:00 p.m. Friday through 7:00 p.m. Sunday.

B. Coordinate access to occupied spaces with Contractor.

C. No openings to space are to be left unsecured.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 PREPARATION

A. Prior to removal verify with Contractor’s superintendent whether to salvage, store or dispose.

3.2 DEMOLITION

A. Remove vinyl base carefully so as not to damage existing wall finishes.

B. Flooring finish removals:
   1. Remove any existing carpet, glue, tile, and setting bed including adhesives, primers or mortars. Remove all adhesives that can be removed by hand scraping.
   2. Remove materials by heating and scraping methods. Maintain materials in a moist or non-friable state. Do not dry scrape or sweep felt or adhesive materials. Do not sand or grind floor coverings or materials that can be removed by heating or scraping.
   3. Where resilient flooring is removed conform to "Recommended Work Procedures for Resilient Floor Coverings" published by the Resilient Floor Covering Institute.
4. Prepare substrate for new floor finish.

3.3 DISPOSAL OF DEMOLISHED MATERIALS
   A. Transport and legally dispose of materials off site.

END OF SECTION
SECTION 04220
CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Rated and non-rated interior masonry partitions.
   2. Precast concrete lintels.

B. Related Work Not Covered by This Specification:
   1. Brick masonry.
   2. Multi wythe masonry.
   3. Vertically reinforced unit masonry.
   4. Steel Lintels.

1.2 DESCRIPTIONS

A. The applications shown on the attached guidelines are typical when secured at ceiling
   and floor.

1.3 SUBMITTALS

A. Product Data: Submit product data for masonry units and manufactured products.

1.4 QUALITY ASSURANCE

A. Fire Performance Characteristics: Where indicated, provide materials and construction
   which are identical to those of assemblies whose fire endurance has been determined
   by testing in compliance with ASTM E 119 by a recognized testing and inspecting
   organization or by another means, as acceptable to authority having jurisdiction.

B. Single Source Responsibility:
   1. Masonry Units: Obtain exposed masonry units of uniform texture and color, or a
      uniform blend within the ranges accepted for these characteristics, from one
      manufacturer for each different product required for each continuous surface or
      visually related surfaces.
   2. Mortar Materials: Obtain mortar ingredients of uniform quality and from one
      manufacturer for each cementitious and admixture component and from one
      source or producer for each aggregate.

C. Codes and Standards: Comply with requirements of Governing Codes and ACI 500-92
   - Building Code Requirements for Masonry Structures.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry materials to project in undamaged condition.

B. Store and handle masonry units to prevent their deterioration or damage due to
   moisture, temperature changes, contaminants, corrosion or other causes.
1. Limit moisture absorption of concrete masonry units during delivery and until time of installation to the maximum percentage specified for Type I units for the average annual relative humidity as reported by the U.S. Weather Bureau Station nearest project site.

C. Store cementitious materials off the ground, under cover and in dry location.

D. Store aggregates where grading and other required characteristics can be maintained.

E. Store masonry accessories including metal items to prevent deterioration by corrosion and accumulation of dirt.

1.6 PROJECT CONDITIONS

A. Protection of Work: During erection, cover top of walls with waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress; extend cover a minimum of 24 inches down both sides and hold cover securely in place.

B. Staining: Prevent grout or mortar or soil from staining the face of masonry to be left exposed or painted. Remove immediately grout or mortar in contact with such masonry.

C. Protect floors, ledges and projections from droppings of mortar.

   1. Do not lay masonry units which are wet or frozen.
   2. Remove any ice or snow formed on masonry bed by carefully applying heat until top surface is dry to the touch.
   3. Remove masonry damaged by freezing conditions.

1.7 SEQUENCE AND SCHEDULING

A. Sequence masonry to coordinate with installation of related work, and work of other trades.

PART 2 - PRODUCTS

2.1 CONCRETE MASONRY UNITS

A. Comply with referenced standards and other requirements indicated below applicable to each form of concrete masonry unit required.

B. Load-bearing: ASTM C 90. Solid units to be 100% solid.
   1. Unless otherwise indicated use lightweight units having expanded shale aggregate complying with ASTM C 331 to produce a maximum dry net weight of 105 lbs. per cu. ft.
   2. Type I, moisture controlled units.
   3. Manufacturer's standard uniform smooth textured units, nominal 16" x 8" face.
C. Provide lintels, corners, control joints, bond beams and similar special shapes required.
   1. Provide square-edged units for outside corners, except where indicated as bullnose.

2.2 MORTAR

A. Proportioned site mixed, premixed or ready mix mortar having a compressive Strength
   of 1,800 psi at twenty-eight days may be used.

B. Proportioned Site Mixed Mortar: ASTM C 270.
   1. Non-reinforced Masonry: Type S or Type N above grade, Type M below grade.
      a. Hydrated Lime: ASTM C 207, Type S.
      b. Aggregate: ASTM C 144.
      c. Water: Clean and potable.

C. Manufactured Pre-mixed Cement Mortar: ASTM C 91, Type "S", natural cement color.
   1. Basis of Specification:
      a. Southwest Portland Cement Co. "Richmortar"
   2. Mortar Proportions, Compressive Strength and Usage: Proportions for pre-mixed
      masonry mortar to be by volumes conforming to ASTM C 270 as follows:

<table>
<thead>
<tr>
<th>Mortar Type</th>
<th>Parts By Volume of Pre-Mixed Masonry Mortar</th>
<th>Aggregate Ratio (Measured)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;S&quot;</td>
<td>1</td>
<td>Not less than 2 1/4 and not more than 3 times the sum of the volume of masonry mortar used.</td>
</tr>
</tbody>
</table>

D. Ready-mixed Mortar: ASTM C 1142 Type "RS" batch plant prepared and delivered
   ready-mixed mortar may be used.

E. Admixtures: Do not lower freezing point of mortar or grout by use of admixtures or
   anti-freeze agents. Under no circumstances will chloride-containing additives be
   permitted.

2.3 HORIZONTAL JOINT REINFORCING

A. Provide welded wire units prefabricated in straight lengths of not less than 10 ft., with
   matching corner ("L") and intersecting ("T") units. Fabricate from cold-drawn steel wire
   complying with ASTM A 82, with deformed continuous side rods and plain cross-rods,
   into units with widths of approximately 2" less than nominal width of walls, veneer
   and partitions as required to position side rods for full embedment in mortar with mortar
   coverage of not less than 5/8-inch on joint faces exposed to exterior and not less than
   1/2-inch elsewhere. Provide truss type reinforcing with diagonal cross-rods. Space at
   16" centers vertically.

B. Wire Sizes: Fabricate with 9-gauge side and cross rods, unless otherwise indicated.

C. For exterior walls hot-dip galvanize, joint reinforcing after fabrication to comply with
   ASTM A 153, Class B-2 coating (1.5 oz. per sq. ft.). For other areas fabricate from
   wire with minimum 0.40 oz. zinc coating.
2.4 ANCHORS

A. Buck Anchors: 16 gauge galvanized steel.

B. Strap Anchors: Flat steel straps, 1/8-inch by 1-1/2 inches wide. Bend ends as indicated. Hot dip galvanize after fabrication.

C. Miscellaneous Anchors: Provide straps, plates, shapes, bars, bolts, rods and similar items as detailed or if not detailed, as required to securely anchor masonry work to substrates.

2.5 PRECAST CONCRETE LINTELS

A. Fabricate from concrete having minimum compressive strength 3,000 psi, 28 days. Cure 24 hours and age 30 days prior to using.

B. Reinforcing material to be steel, ASTM A 615, Grade 60. Design units for spans indicated on drawings and in schedules.

2.6 JOINT MATERIALS

A. Non-Metallic Expansion Joint Strips: Premolded, flexible cellular neoprene rubber filler strips complying with ASTM D 1056, Grade RE41E1, capable of compression up to 35% of width and thickness indicated.

B. Premolded Control Joint Strips: Designed to fit standard sash block and to maintain lateral stability in masonry wall, either of the following:
   2. Polyvinyl chloride, ASTM D 2287, General Purpose Grade, Designation PVC-63506.

C. Bond Breaker Strips: Asphalt-saturated organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

2.7 FLASHING

A. Laminated copper/fabric flashing for masonry flashing: 3 oz. copper sheet laminated between 2 sheets of bituminous saturated fabric.

2.8 WEEPHOLES

A. Provide 1/4-inch round, medium density polyethylene plastic tube weepholes.

2.9 MASONRY CLEANERS

A. Job-Mixed Detergent Solution: Solution of trisodium phosphate (1/2 cup dry measure) and laundry detergent (1/2 cup dry measure) dissolved in one gallon of water.

PART 3 - EXECUTION
3.1 INSTALLATION

A. Do not wet concrete masonry units.

B. Chases and Recesses: Provide not less than 8" of masonry between chase or recess and jamb of openings, and between adjacent chases and recesses.

C. Leave openings for equipment to be installed before completion of masonry work. After equipment installation complete masonry work to match work immediately adjacent to opening.

D. Cut masonry units with motor-driven saw designed to cut masonry with clean sharp, unchipped edges, cut units as required to provide pattern shown and to fit adjoining work neatly. Use full unit without cutting wherever possible. Use dry cutting saws to cut concrete masonry units.

E. Pattern Bond: Running Bond unless otherwise indicated with head joints in alternate course aligned. Bond and interlock each course of each wythe at corners.

F. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to properly locate openings, movement type joints, returns and offsets. Avoid the use of less-than-half size units at corners, jambs and wherever possible at other locations.

G. Lay up walls plumb and with courses level, accurately spaced and coordinated with other work.

H. Built-in Work:
   1. As the work progresses, build in items specified under this and other sections of these Specifications. Fill in solidly with masonry around built-in items.
   2. Fill space between hollow metal frames and masonry solidly with mortar.
   3. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.

3.2 MORTAR BEDDING AND JOINTING

A. Batch Control:
   1. Measure and batch materials either by volume or weight, such that the required proportions for mortar can be accurately controlled and maintained. Measurement of sand exclusively by shovel will not be permitted.
   2. Mix only full batches of mortar, maintain uniform water-cement ratio, mix each batch same length of time and tool all joints in same way at same mortar consistency.
   3. Mix mortars, with amount of water consistent with satisfactory workability, to provide maximum tensile bond strength within the capacity of the mortar.
   4. Mix mortar ingredients for a minimum of 5 minutes in mechanical batch mixer. Hand mixing NOT acceptable. Use water clean and free of deleterious materials which would impair the work. Do not use mortar which has begun to set, or if more than 2-1/2 hours has elapsed since initial mixing. Retemper mortar during 2-1/2 hour period as required to restore workability.

04220-5
B. Lay solid masonry units with completely filled bed, head and collar joints; butter ends with sufficient mortar to fill head joints and shove into pace. Do not slush head joints.

C. Lay hollow masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings and in all courses of piers, columns and pilasters, and where adjacent to reinforced cells or cavities or filled with concrete or grout. Do not furrow bed joints or slush head joints. Remove any mortar fins which protrude into grout space. For starting course on footings where cells are not grouted, spread out full mortar bed including areas under cells.

D. Joints: Maintain required joint widths except for minor variations required to maintain bond alignment. If not otherwise indicated, lay walls with 3/8" joints. Cut joints flush for masonry which will be concealed or covered by other materials. Tool exposed joints slightly concave.
1. Interior joints: Rake mortar in preparation for application of caulking or sealants.
2. Exterior Joints: Concave.

E. Remove masonry units disturbed after laying; clean and re-lay in fresh mortar. Do not pound corners at jambs to fit stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar, and reset in fresh mortar.

3.3 CONSTRUCTION TOLERANCES

A. Variation from Plumb: For vertical lines and surfaces of columns, walls and arises do not exceed 1/4" in 10', or 3/8" in a story height not to exceed 20', nor 1/2" in 40' or more. For external corners, expansion joints, control joints and other conspicuous lines, do not exceed 1/4" in any story or 20' maximum, nor 1/2" in 40' or more. For vertical alignment of head joints do not exceed plus or minus 1/4" in 10', 1/2" maximum.

B. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines, do not exceed 1/4" in any bay or 20' maximum, nor 1/2" in 40' or more. For top surface of bearing walls do not exceed 1/8" between adjacent floor elements in 10' or 1/16" within width of a single unit.

C. Variation of Linear Building Line: For position shown in plan and related portion of columns, walls and partitions, do not exceed 1/2" in any bay or 20' maximum, nor 3/4" in 40' or more.

D. Variation in Cross-Sectional Dimensions: For columns and thickness of walls, from dimensions shown, do not exceed minus 1/4" nor plus 1/2".

E. Variation in Mortar Joint Thickness: Do not exceed bed joint thickness indicated by more than plus or minus 1/8".

3.4 HORIZONTAL JOINT REINFORCING

A. Provide continuous horizontal joint reinforcing at 16" vertical spacing on all work. Fully embed longitudinal side rods in mortar for their entire length. Lap reinforcement a minimum of 6". Do not bridge control and expansion joints with reinforcing. Provide continuity at corners and wall intersections by use of prefabricated "L" and "T" sections.
Cut and bend units for continuity at return, offsets, enclosures and other special conditions.

1. Space single-wythe wall reinforcement, at 16” o.c. vertically, unless otherwise indicated.

B. In addition to wall reinforcement, provide additional reinforcement at openings. Reinforce masonry openings greater than 1’-0” wide, with horizontal joint reinforcing placed in horizontal joints 8” apart, immediately above lintels and below sills. Extend reinforcing a minimum of 2’-0” beyond jambs of the openings, bridging control joints where provided.

3.5 FLASHING OF MASONRY WORK

A. Provide concealed flashing in masonry work at, or above, shelf angles, lintels, ledges and other obstructions to the downward flow of water in the wall so as to divert such water to the exterior. Prepare masonry surfaces smooth and free from projections which could puncture flashing. Place through-wall flashing on sloping bed of mortar and cover with mortar. Seal penetrations in flashing with mastic before covering with mortar. Extend flashing through exterior face of masonry and turn down to form drip.

B. Extend flashing the full length of lintels and shelf angles and minimum of 4” into masonry each end. Extend flashing from exterior face, turned up a minimum of 4”, and to within 1/2” of the interior face of the wall in exposed work.

C. Interlocked joints of deformed metal flashing by overlapping deformations not less than 1-1/2” and seal lap with elastic sealant.

D. Install flashing to comply with manufacturer’s instructions.

3.6 ANCHORING AND BONDING OF MASONRY WORK

A. Provide standard type, complying with code requirements.

B. Completely embed in mortar portion of anchors extending into masonry.

3.7 LINTELS

A. Provide masonry lintels where shown or wherever openings of more than 1’-0” are shown without structural steel or other supporting lintels, and for all openings over 1’-0” wide required for mechanical and electrical or other work. Provide precast or formed-in-place masonry lintels.

1. Thoroughly cure precast lintels before handling and installation.

2. Formed-in-place lintels - temporarily support U-shaped units with reinforcing bars and filled with concrete.

B. Provide one horizontal reinforcing #5 bar for each 4” of wall thickness of size-number not less than number of feet opening width. Provide required steel in bottom of lintel except in precast lintels, provide additional set of steel in top of lintel. Reinforcing for lintel carrying concentrated loads or spanning openings over 6’-8” to be reinforced per drawings or as otherwise directed.
C. Minimum bearing at each jamb - 4" for openings less than 6'-0" wide; 8" for wider openings.

3.8 CONTROL AND EXPANSION JOINTS

A. Provide vertical and horizontal expansion, control and isolation joints in masonry where shown. Build-in related items as the masonry work progresses.

B. Build in non-metallic joint fillers where indicated.

C. Build in horizontal pressure relieving joints where indicated; construct joints by either leaving an air space or inserting non-metallic compressible joint filler of width required to permit installation of sealant and backer rod.

D. Provide uniform joints of proper depth for back rods and sealant.

3.9 REPAIR, POINTING AND CLEANING

A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

B. Pointing: During joint toothing, enlarge voids or holes, except weep holes and completely fill with mortar. Point up joints at corners, openings and adjacent work to provide a neat, uniform appearance, properly prepared for application of caulking of sealant compounds.

C. For exposed masonry wipe off excess mortar as work progresses. Dry brush at the end of each day's work. After mortar is thoroughly set and cured, dry clean to remove large particles of mortar using wood paddles and scrapers. Use chisel or wire brush if required.
   1. Clean with detergent solution where necessary.
   2. For all surfaces to receive finish painting, remove all material that would be visible through paint or detrimental to paint bond.

D. At completion of any masonry work in area, leave area clean and free of any mortar residue or other debris created by work of this section.

E. Protection: Provide final protection and maintain conditions in a manner which ensures unit masonry work being without damage and deterioration at time of substantial completion.
MINIMUM L3x3x14 GA,
2'-0" LONG @ 4'-0" O.C.
FASTEN TO ROOF DECK
W/ 4 SELF TAPPING
SCREWS EA. (USG S-12)
PROVIDE ANGLE ON
BOTH SIDES OF WALL

MAX. WALL HT. 28'-0"

COMRESSIBLE FILLER

8" MASONRY WALL -
RATING PER PLAN

REINFORCING - REFERENCE Ø4220-B

16" DEEP MASONRY BOND BEAM W/ 2-#4 BARS
CONT. (SEE NOTE BELOW)

8'-0" to 12'-0" AFF

9 GA. GALVANIZED HORIZONTAL LADDER
TYPE REINFORCING @ 16" O.C. VERTICAL

SLAB (5" MIN. THICKNESS FOR WALLS UP TO 18'-0"
SLAB (6" MIN. THICKNESS FOR WALLS 18'-0" AND
ABOVE)

NOTE: OPENINGS MAY BE CREATED UNDER BOND BEAM TO A MAXIMUM WIDTH OF
12'-0". SPACING BETWEEN OPENINGS SHALL BE MINIMUM OF 8'-0". SMALLER
DISTANCES BETWEEN OPENINGS ARE POSSIBLE USING REINFORCING AT
JAMBS. CONTACT CONTRACTOR FOR SPECIFIC DESIGN.

MASONRY WALL SECTION

NO SCALE
Designs for Non-bearing Masonry Partitions for wall heights from 16 to 28 feet *

All walls to have 9 gauge duro-wall @ 16" O.C. vertical Deflection criteria - L/180

<table>
<thead>
<tr>
<th>WALL HEIGHT IN FEET</th>
<th>REINF'G SIZE</th>
<th>REINF'G SPACING IN INCHES</th>
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</table>

*For unusual conditions, or wall heights in excess of those shown here, contact a registered, qualified engineer to provide designs for wall construction.

END OF SECTION

04220-10
SECTION 06100
ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Non structural wood framing.
2. Nailers, blocking, furring, and sleepers.
3. Fire retardant treat all lumber and plywood provided under this Section.

B. Related Work Not Covered by this Specification:
1. Floors, roof and wall framing.
2. Finish Carpentry and millwork.

1.2 DESCRIPTIONS

A. Preservative treat the following:
1. All wood in contact with concrete or the ground or exposed to weather.
2. Roof curbs, blocking and sheathing.

B. Fire retardant treat wood designated FRPT.

1.3 SUBMITTALS

A. Certificates: Submit lumber producers grading rule design values for selected species and grade including Fire Retardant certificate for treated lumber and plywood.

1.4 QUALITY ASSURANCE

A. Standards:
1. Lumber: Comply with PS-20 and rules of respective grading and inspecting agencies for appropriate species.
2. Plywood Products: Comply with PS-1 (ANSI A199.1) and American Plywood Association's Performance Standards.
3. Treated Plywood and Lumber: Comply with applicable American Wood Preservers' Association.

B. Factory-mark each piece of lumber and plywood with type, grade, mill and grading agency, except omit marking from surfaces to be exposed with transparent finish or without finish.

1.5 DELIVERY, STORAGE & HANDLING

A. Unloading so protective sheeting is not damaged.

B. Keep materials dry at all times. Protect against exposure to weather and contact with damp or wet surfaces. Store lumber and plywood on blocking at least 6" above ground and provide air circulation within stacks. Do not store in damp portion of building.
1.6 COORDINATION

A. Fit carpentry work to other work. Scribe and cope for accurate fit.

B. Correlate location of furring, nailers, blocking, grounds and similar supports for proper attachment of other work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Lumber, finished 4 sides, 19% maximum moisture content:
   1. Light framing: Construction grade douglas fir or southern pine, appearance grade where exposed.
   2. Boards, nailers, blocking, furring and sleepers: Construction grade.

B. Plywood, APA Performance-Rated Plywood complying with grade designation, span rating, exposure durability classification and thickness. Span Ratings to suit support spacing.

C. Fasteners and Anchorages: Size, type, material and finish as recommended by applicable standards. Comply with Federal Specifications for nails, staples, screws, bolts, nuts, washers and anchoring devices. Hot dip galvanize per ASTM A 53 where in ground contact or exposed to weather or high humidity per ASTM A 153.

2.2 WOOD TREATMENT

A. Preservative Treatment: Use water-borne preservatives complying with AWPA Standards C15 (Wood for Commercial-Residential Construction):
   1. Above-ground items: AWPB LP-2. After treatment, kiln-dry lumber and plywood to a maximum moisture content, respectively, of 19 percent and 15 percent.
   2. Posts in ground contact: AWPB FDN.

B. Fire-Retardant Treatment: Pressure impregnate lumber and plywood with chemicals complying with AWPA C20 and C27, interior Type A.
   1. Inspect each piece of treated lumber or plywood after drying and discard damaged or defective pieces.
   2. Kiln dry all pieces to maximum moisture content of 15%.
   3. Acceptable Products: Hoover "Pyro-Guard" or Hickson "Dricon".

C. Coat surfaces cut after treatment with heavy brush coating of same fire retardant chemical.

D. Inspect each piece of treated lumber or plywood after drying and discard damaged or defective pieces.

PART 3 - EXECUTION

3.1 INSTALLATION
A. Lumber:
   1. Discard unsound, warped, bowed, twisted and improperly treated or seasoned materials. Do not use material that is too small for fabrication without excessive joints.
   2. Use longest practical pieces with minimum joints or optimum jointing arrangements.
   3. Set work accurately to design levels and lines, plumb and true, fitted neatly to adjacent work. Shim as necessary to provide even substrates for attachment of other materials.

B. Plywood:
   1. Comply with American Plywood Association recommendations for fabrication and installation, including joint spacing and fastening requirements.
   2. Fasten plywood sheathing to metal substrates with self-drilling, self-tapping screws such as Milcor Titelock No. 6 PL Screws.

C. Fastening and Anchorage:
   1. Fasten and anchor work as shown. Where not shown conform to building code and recognized standards as required to support applied loadings.
   2. Provide washers under bolt heads and nuts in contact with wood. Countersink fasteners to avoid interference with other work.
   3. Use common wire nails, except where other types of nails required by specified standards. Fasten to light gauge metal with self-drilling/self-tapping metal screws.

3.2 MISCELLANEOUS

A. For nailers for sheet metal flashing attachment, comply with Factory Mutual Bulletin I-49.

B. For nailers for roofing attachment, comply with roofing manufacturer's specifications. Provide blocking of thickness required for insulation.

END OF SECTION
SECTION 06210
PLASTIC LAMINATE CASEWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Field or shop fabricated plastic laminated faced woodwork.
      a. Flush overlay Base and Wall Cabinets.
      b. Counter Tops.
   2. Painted finish hardboard closet shelving.

B. Related Work Not Covered by this Specification:
   1. Sinks.
   2. Custom Wood veneer cabinetry.
   3. Modular casework.

1.2 SUBMITTALS

A. Submit plastic laminate samples for color selection when not selected by Contractor.

1.3 QUALITY ASSURANCE

A. Standards:
   1. Architectural Woodwork Institute (AWI) "Quality Standards and Guide Specifications".
   2. ANSI/BHMA A156.9 "American National Standard for Cabinet Hardware".

B. Mark each piece with manufacturer's identification and AWI quality grade. Identify fire-retardant treated materials in a manner acceptable to authorities having jurisdiction.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver millwork, after completion of painting, wet work, grinding and other work which could damage, soil or deteriorate woodwork.

B. Store material in area it will be erected or in areas having temperature and humidity equivalent to installation area.

1.5 PROJECT CONDITIONS

A. Before fabricating woodwork fitted to other construction, obtain and verify dimensions as required for accurate fit.

PART 2 - PRODUCTS

2.1 MATERIALS
A. **Backing Material:**
   1. Plywood Concealed - Hardwood veneer core, graded for AWI Grade specified, birch face.
   2. Particle board - ANSI A208.1 (Type 1) medium density matt formed wood particle board.

B. **Lumber:** Softwood graded in accordance with AWI for Grade of Work specified, moisture content of 6-8 percent; with flat grain of quality suitable for transparent finish.

C. **Plastic Laminate:** NEMA LD-3 high pressure laminate; minimum thickness and types as follows:
   1. Horizontal surfaces - 0.050" general purpose type.
   2. External Vertical Surfaces - 0.028" general purpose type.
   3. Concealed Backing - 0.020" backer type.
   4. Cabinet Lining - 0.020" cabinet liner type.

D. **Adhesive:** Type recommended by AWI to suit application.

E. **Plastic Edge Trim:** Extruded convex shaped; smooth finish; self locking serrated tongue; of width to match component thickness; color as selected.

2.2 **FINISH HARDWARE**

A. Provide all necessary Finish Casework Hardware. Comply with BHMA A156.9 Cabinet Hardware Standards, US26D Satin Chrome finish.

B. **Shelf Hardware:**
   1. Vertical Slotted Type: Vertical slots spaced 2" on center, 7/8" wide x 11/16" high x length indicated, BHMA No. B84102, zinc-plated steel.
   2. Shelf Brackets: Size required to support shelving widths indicated, BHMA No. B84112, zinc-plated steel. Provide extra heavy brackets for 18" wide brackets.

C. **Cabinet Hardware:**
   1. Doors:
      a. 1 pr. hinges - Grass "Concealed" Hinges or approved equal
      b. 1 door bumper pad
      c. Door Latch - Hettich "Magnetic touch" latch or approved equal
   2. Pulls:
      a. Recessed: As detailed on drawings.
      b. Surface: Colonial Brass nickel plated dull wire.
   3. Drawers:
      a. 1 pr. drawer slides - Knape & Vogt #1305 or approved equal
   4. Shelf Hardware:
      a. Standards - Knape & Vogt #255 or approved equal
      b. 4 supports per shelf - Knape & Vogt #256R or approved equal

2.3 **FABRICATION**

A. Comply with the following AWI quality standards.
   1. Grade & Construction: AWI Custom grade, plastic laminate, matching plastic laminate edge and exposed returns glued and machined and balance laminated.
2. Applicable Sections:
   a. Shelving: AWI Section 600.
   b. Plastic Laminate Cabinets: AWI Section 400.

B. Fabricate woodwork to dimensions, profiles and details shown. Rout or groove back of flat trim members, kerf backs of other wide flat members.

C. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.

D. Use one piece for full length only. Cap exposed plastic laminate finish edges with material of same finish and pattern or plastic trim.

E. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

F. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners.

2.4 FINISHES

A. Plastic Laminate: Color to be selected from full range of standard colors available from manufacturer.

B. Fire-retardant treatment: ASTM E 84, Class A, where required by code or local authorities. Vehicle for preservative compatible with finish.

C. Shop prime and seal closet shelves and concealed work.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install work true and straight without distortion and to tolerance of 1/8-inch in 8'-0" for plumb and level, 1/16-inch maximum offset in flush adjoining surfaces 1/8-inch maximum offsets in revealed adjoining surfaces. Shim using concealed shims.

B. Scribe and cut work to fit adjoining work. Anchor tops securely to support systems as indicated.

C. Install so that doors fit openings properly and accurately aligned. Adjust hardware to center cabinet doors in openings and provide unencumbered operation.

3.2 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION

A. Repair damaged and defective woodwork wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.

B. Clean hardware, lubricate and make final adjustments for proper operation.

C. Clean woodwork on exposed and semi-exposed surfaces.
D. Protection and maintained conditions necessary to ensure that work will not be damaged or deteriorate until acceptance.

END OF SECTION
SECTION 07560
ROOF REPAIRS AT PENETRATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Cut and remove existing membrane roofing and roof insulation and metal deck.
   2. Sheet metal flashing.

B. Related Work Not Covered by This Specification:
   1. Counter flashing for Mechanical Equipment.
   2. Prefabricated roof curbs.

1.2 QUALITY ASSURANCE

A. Roofing: For membrane roofing, base flashing and insulation work, comply with roofing materials manufacturer recommendations.
   1. Use roofers experienced with the type of roof being flashed.
   2. Use roofers approved by the Contractor.

B. Sheet Metal: Comply with the Sheet Metal and Air Conditioning Contractors National Association, Inc. "Architectural Sheet Metal Manual" for design, installation, minimum gauges and anchoring

C. Lumber: PS-20 and rules of respective grading and inspecting agencies for appropriate species and American Wood Preservers' Association for treated lumber.

D. Fire Performance Characteristics: Provide materials identical to those whose fire performance characteristics, as tested by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

1.3 WARRANTY

A. Prior to performing modification to work covered under an existing warranty (bond), notify the signatories to the warranty of the intended modifications. All work shall be performed in a manner that preserves the existing roof warranty.
   1. Notwithstanding these specifications perform work in a manner acceptable signatories to the warranty.
   2. Provide shop drawings and details required to obtain acceptance of modifications.
   3. Have work performed by installers acceptable to the membrane manufacturer.
   4. Have roof inspected upon completion of work by an authorized representative of the membrane manufacturer.

B. Submit letter from signatories stating acceptance of modifications.
PART 2 - PRODUCTS

2.1 MATERIALS

A. Sheet Metal:
   1. Zinc-Coated Steel: Commercial Quality with 0.20% copper, ASTM A 525 except ASTM A 527 for lock-forming, G90 hot-dip galvanized, mill phosphatized for painting; minimum 0.0359” thick.
   2. Copper: ASTM B 152 or B 370, cold-rolled and tempered for forming minimum 16oz.
   3. Gauge: Comply with minimum gauge requirements of SMACNA but not less than specified above or shown on drawings.

B. Pitch: Mastic sealant, polyisobutylene; non-hardening, non-skinning, non-drying, non-migrating sealant.

C. Elastomeric Membrane Flashing: Uncured elastomers as recommended by roof membrane manufacturer.

D. Lumber, finished 4 sides, 19% maximum moisture content Construction grade.

E. Bituminous Coating: SSPC - Paint 12, solvent type mastic, nominally free of sulfur, compounded for 15-mil dry film thickness per coat.

F. Paper Slip sheet: 5 lb rosin-sizes building paper.

G. Metal Accessories: Provide fasteners, clips, cleats, straps, anchoring devices and similar accessory units as required. Match, or compatible with, material being installed of size and gauge required for performance.

2.2 FABRICATIONS

A. NRCA approved, fabricated from heavy galvanized sheet steel of gauges required to support indicated equipment.

PART 3 - EXECUTION

3.1 PROTECTION

A. Protect existing roofing that is to remain in place.

B. Coordinate roof patching and flashing at roof openings with related trades to minimize time of weather exposure.

3.2 SHEET METAL INSTALLATION

A. Comply with metal producers’ recommendations for tinning, soldering and cleaning of joints.

B. Isolate dissimilar metals for contact with asphalt coating.
3.3  ROOFING AND COMPOSITION FLASHING

A. Where replacing existing roof insulation, provide new insulation of the same thickness and "R" value as the existing insulation.

B. Where patching to built-up roof, remove existing aggregate surfacing so that new and old work can be lapped a minimum of 24 inches.

C. Perform work only when substrates are dry and ambient temperatures is within range recommended by roofing materials and manufacturer.

END OF SECTION
SECTION 07900

JOINT SEALERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sealants at intersection of construction components within and exterior to building.
   a. Seal all exterior joints weather tight.
   b. Seal interior joints subject to movement.
   c. Seal acoustical and fire-rated wall and ceiling expansion joints, and perimeter joints between interior wall surfaces and hollow metal door, window, and elevator entrances.

2. Primers, backer rods, bond breakers and accessories recommended by sealant manufacturer.

B. Specified in Other Sections:

1. Glazing gaskets.
2. Sealants installed at the time of erection.
3. Fire stopping penetrations.

1.2 SUBMITTALS

A. In addition to product data, submit:

1. Samples of each type and color of joint sealant.
2. Test reports evidencing compliance with requirements.

1.3 QUALITY ASSURANCE

A. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers.

1.4 JOB CONDITIONS

A. Install sealants under favorable weather conditions when temperature is in lower third of temperature range recommended by manufacturer for installation.

PART 2 - PRODUCTS

2.1 SEALANTS

A. Exterior vertical joints, except at glazing:

1. One component non-sag polyurethane, ASTM C 920, Type M or S, Class 25 Grade NS.

2. Acceptable Products:
   a. Sika Sikaflex 1A, Sikaflex-2C
   b. Tremco Dymonic.
c. Sonneborn Sonolastic NP1, Sonolastic NP2 (or NP2 Pretint where applicable)

B. Horizontal Concrete Joints:
1. Two component polyurethane Sealant ASTM C 920, Type M or S, Class 25, Grade P.
2. Acceptable Products:
   a. Pecora Chemical "Dynatred".
   b. Sonneborn Sonolastic SL 1, Sonolastic SL 2 (or SL 2 Pretint where applicable)
   c. Tremco THC-900, THC-901 (for slopes over 5%)

C. Interior Wall joints:
1. One component acrylic latex caulking compound, ASTM C-834, non-staining, non-bleeding.
2. Acceptable Products:
   a. Tremco Tremflex 834
   b. Sonneborn Sonolac Acrylic Latex

D. Seam sealant for small metal to metal joints; Tremco Seam Sealer.

E. Provide sealants in colors as selected from manufacturer's standards.

2.2 MISCELLANEOUS MATERIALS

A. Primer: Provide primer recommended by sealant manufacturer for joint surfaces to be primed.

B. Bond Breaker Tape: Provide polyethylene tape or other plastic tape as recommended by sealant manufacturer, where bond to substrate or joint filler must be avoided for performance. Use self-adhesive tape where applicable.

C. Sealer Backer Rod: Provide compressible rod stock of polyethylene foam, polyurethane foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended by sealant manufacturer for back up of and compatibility with sealant.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine substrate and report unsatisfactory conditions in writing. Joint surfaces to be clean, dry, free of dust, oils, form release agents, loose mortar, and other contaminants. Starting installation constitutes acceptance of substrates.

3.2 INSTALLATION

A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and uniform appearance. Coordinate with work of other sections. Clean
and prime joints, and install manufacturer’s recommended bond breakers, backer rods and sealant.

B. Backer Rods and Tape:
1. For 3/16-inch or wider joints, install sealant backer rod for sealants, except where recommended to be omitted by sealant manufacturer for application indicated.
2. For joints 3/16-inch or wider, install bond breaker tape where required by manufacturer's recommendations to ensure that liquid applied sealants will perform as intended. Install backer rods at depths required to control depth-to-width ratio of sealant in accordance with sealant manufacturer’s instructions.

C. Deposit sealants in uniform, continuous ribbons without gaps or air pockets. Completely wet joint’s bond surfaces equally on opposite sides. Fill sealant rabbet to slightly concave surface, slightly below adjoining surfaces. Tool joints after installation to ensure firm, full contact with joint faces in accordance with manufacturer’s recommendations.

D. Spillage: Do not allow sealants or compounds to overflow from confines of joints, or to spill onto adjoining work, or to migrate into voids of exposed finishes. Clean adjoining surfaces by whatever means necessary to eliminate evidence of spillage.

3.3 CURE AND PROTECTION
A. Cure and protect sealants as directed by manufacturers. Replace or restore damaged sealants. Clean adjacent surfaces to remove spillage.

END OF SECTION
SECTION 08110

STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. Hollow metal doors.
      a. Fire rated and non-rated.
   2. Hollow metal frames for doors, windows and interior lights
   3. Metal door louvers.
   4. Moldings for glazing
   5. Transom panels.

B. Related Work Not Covered by This Specification:
   1. Acoustically rated doors.
   2. Wood doors.
   3. Aluminum doors and frames.
   4. Door hardware.
   5. Glass and glazing.
   6. Painting.

1.2 QUALITY ASSURANCE

A. Fire Rated Assemblies: Provide fire-rated doors and frames tested as fire door assemblies, complete with type of hardware to be used. Identify each fire door with recognized testing laboratory labels, indicating applicable fire rating of steel doors. Assemblies to comply with NFPA Standard No. 80.

B. Door Standard: ANSI A-151.1 Level 'A' criteria and be tested to 1,000,000 operating cycles. Submit certification of Level 'A' doors with approval drawings. Do not supply any type or gage of door not having been tested and passed this criteria.

1.3 DELIVERY, STORAGE AND HANDLING

A. Deliver doors and frames cardboard wrapped, crated, palletized or otherwise protected during transit and site storage.

B. Inspect doors and frames upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and accepted by the Contractor; otherwise remove and replace damaged items.

C. Store doors and frames at building site in dry secure place.
   1. Place units on minimum 4 inches high wood blocking, evenly spaced or otherwise arranged to prevent sagging, warping, permanent deformation or other damage to material being stored.
   2. Avoid use of non-vented plastic or canvas shelters which could create a humidity chamber.
   3. If cardboard wrapper on door becomes wet, remove carton immediately.
4. Provide 1/4 inch spaces between stacked doors to promote air circulation.

1.4 SEQUENCING AND SCHEDULING

A. Deliver all doors and frames to jobsite so as not to delay progress of other trades.

B. Issue purchase orders to frame, door and other hardware suppliers early so not to interfere with normal quoted delivery of materials.

1.5 WARRANTY

A. Hollow metal doors and frames shall be supplied with a one (1) year warranty against defects in materials and workmanship.

B. Warranty to commence with upon beneficial occupancy of the space.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel: Commercial quality, stretcher leveled flatness, cold rolled steel per ASTM A 366 and ASTM A 568.


2. Internal reinforcing may be manufactured of hot rolled pickled and oiled steel per ASTM A 569.

B. Coating Materials, primer: Use manufacturer's standard rust inhibiting primer conforming to ANSI A-224.1. Field-apply non-corrosive bituminous coating to interior surfaces of HM frame in contract with masonry, mortar or plaster containing antifreeze or other reactive agents per frame manufacturer’s recommendations.

C. Core Materials:

1. Non-labeled doors or labeled doors, polystyrene foam core - self extinguishing, non-toxic in case of fire.

2. Fire labeled doors with temperature rise rating shall have a mineral fiber core sufficient to obtain 250°F temperature rating.

D. Glass light frames in doors fabricated of not less than 18 ga. galvanized steel.

2.2 FABRICATION

A. Fabricate doors and frames in accordance with SDI 100 except where more stringent requirements are specified.

B. Doors:

1. Classification: SDI Grade II - Model 1 design.

2. Face sheets: Minimum of 18 ga. cold rolled steel for interior and exterior.

3. Vertical lock edges beveled 1/8 inch in 2 inches.
4. Top and bottom channels:
   a. Not less than 16 ga. - flush or inverted.
   b. Welded to the face sheets.
   c. Close tops of outswinging exterior doors flush by the addition of steel top channel fillers necessary.
5. Astragals: Flat security type or ‘Z’.

C. Frames Construction:
   1. Sheet Metal and Minimum Gauge:
      a. Interior - 16 ga. cold rolled steel.
      b. Exterior - 16 ga. galvanized.
   2. Connections: Face welded, ground smooth, and reprimed.
      a. Welds on frames, transoms, and sidelights to be flush with neatly mitered or butted material cuts.
   3. Provide temporary shipping bars to help protect from damage during transit and handling. Remove temporary spreaders before setting frames.

D. Frame Anchors:
   1. Wall anchors for frame attachment to masonry construction
      a. Anchors built into exterior or masonry are to be galvanized.
      b. Masonry anchors, adjustable, flat, corrugated or perforated 'T' shaped anchors with leg not less than 2 inches wide by 10 inches long or masonry "wire" type not less than 3/16 inch diameter.
   2. Wall anchors for attachment to drywall partitions:
      a. Manufacturers adjustable type compression anchors where knocked down (K.D.) are indicated.
      b. Use steel or wood stud anchors sized to accommodate frame jamb depth and face dimension on welded frames.
   3. Provide frame jamb anchors; one each jamb per 30 inches of frame height or fraction thereof.
   4. Floor anchors; Angle clip type:
      a. 16 ga. minimum.
      b. To receive 2 fasteners per jamb.
      c. Welded to the bottom of each jamb.
   5. In place masonry or concrete:
      a. 3/8 inch countersunk flat head stove bolt and expansion shields.
      b. Spaced 6 inches from top and bottom of frame and at 24 inches on center maximum between.
      c. Weld pipe spacers or other type of spacers per manufacturers standard design in back of frame to protect frame profile during tightening of bolts and anchors.
   6. Head struts; For frames not anchored to masonry or concrete construction provide ceiling struts spot welded to jambs each side extending to building structure where called for on schedule.

E. Preparation For Hardware:
   1. Reinforce components for hardware installation in accordance with SDI-107.
      a. Lock and Closer Reinforcements - "box" type.
      b. Hinge reinforcing on doors - channel type, continuous from top to bottom of door welded to face sheets.
2. Punch single leaf frames to receive three (3) silencers; double leaf frames to receive one silencer per leaf at head.

3. Locate hardware in accordance with Steel Door Institute's Recommended Locations for Builders' Hardware for Standard Steel Doors and Frames®.

4. Supply welded in mortar guards at hardware cutouts in frames built into masonry or grouted in full.

PART 3 - EXECUTION

3.1 SETTING FRAMES

A. Set frames in accordance with SDI 105.
   1. Install fire rated frames in accordance with NFPA 80.

B. Set welded frames in position prior to beginning partition work. Brace frames until permanent anchors are set.

C. Set anchors for frames as work progresses. Install anchors at hinge and strike levels.

D. Use temporary setting spreaders at all locations. Use intermediate spreaders to assure proper door clearances and header braces for grouted frames.

E. Install frames in prepared openings in concrete and masonry walls using countersunk bolts and expansion shields.

F. Install Knock Down (KD) drywall frames plumb and true with only hairline seams allowed at head and jamb joint connections.

3.2 DOOR INSTALLATION

A. Clearances at edge of doors:
   1. Between door and frame at head and jambs: 1/8 inch
   2. At meeting edges pairs of doors and at mullions: 1/8 inch
   3. At transom panels, without transom bars: 1/8 inch
   4. At sills without thresholds: 5/8 inch maximum above finish floor
   5. At sills with thresholds: 1/8 inch above threshold

3.3 ADJUSTMENT AND CLEANING

A. Remove dirt and excess sealant, mortar, or glazing compounds from exposed surfaces.

B. Adjust moving parts for smooth operation. Use shims if necessary to allow for proper closing.

C. Fill all dents, holes, and other surface defects with metal filler and sand smooth and flush with adjacent surfaces. Paint to match finish.

END OF SECTION
SECTION 08122
INTERIOR ALUMINUM FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. Interior aluminum door and glazing frames.
      a. Fire rated and non-rated.
   2. Moldings for glazing.

B. Related Work Not Covered by This Specification:
   1. Steel (Hollow metal) doors and frames.
   2. Wood doors.
   3. Aluminum entrance construction doors and frames.
   4. Door hardware.
   5. Glass and glazing.

1.2 DESCRIPTIONS

A. Rectilinear design, 1-1/2" wide face profiles, a 9/32" return, and rabbet wall thickness of .070".

B. Throat: sized for frame or adjustable as required.
   1. Maximum throat tolerance for wall thickness: 1/16".

1.3 SUBMITTALS

A. Color Selection Samples: Submit samples of manufacturer's standard colors on aluminum sections for selection by Contractor. Where normal color and texture variations are expected, include 2 or more units in each set of samples showing limits of such variations.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: All frames and components shall be installed by skilled craftsman, supervised by personnel familiar with commercial application and building codes. The installation contractor shall be thoroughly familiar with the manufacturer's recommended installation instructions, and proper interface with other building elements.

B. Fire Rated Assemblies: Provide fire-rated doors and frames tested as fire door assemblies, complete with type of hardware to be used.
   1. Assemblies to comply with NFPA Standard No. 80, ASTM E 152, UAL-IOB, NFPA 252, CSFM 34.2 AND UMB 43.7 as required by local building code for 20-minute, 45 minute or 90-minute certification as scheduled on drawing.
   2. Identify each fire door with recognized testing laboratory labels, indicating applicable fire rating of steel doors.
1.5 PRODUCT HANDLING

A. Deliver frames cartoned to provide protection during transit and job storage.

B. Inspect frames upon delivery for damage. Repair minor polyester finish damages utilizing air dry spray enamel of matching color.

C. Store frames at building site under cover. Do not use coverings that would discolor finish.

1.6 PROJECT CONDITIONS

A. Maintain temperature and humidity conditions within building as close as possible to final occupancy standards.

B. Field measure as required for proper fitting of the work; where necessary, provide adequate installation tolerances to allow proper fit without prior measurement.

PART 2 - PRODUCTS

2.1 ACCEPTABLE PRODUCTS

A. Basis of Design: Products by Frameworks, Inc.

B. Other aluminum door frame manufacturers may be accepted and approved by Contractor.

2.2 MATERIALS

A. Aluminum Extrusions: All component shapes shall be extruded from controlled alloy billets of 606375 to assure compliance with tight dimensional tolerances, and maintain color uniformity.

B. Fasteners shall be of basic metal and alloy, unless otherwise indicated. Do not use exposed fasteners, except where indicated on approved shop drawings. Such fasteners, if approved, shall be of matching finish, color, and texture as the metal being fastened.

C. Brackets and Reinforcements: High-strength aluminum where feasible; otherwise, nonmagnetic stainless steel or hot-dip galvanized steel complying with ASTM A 123.

D. Concrete/Masonry Inserts: Cast or malleable iron, or ASTM A 123 hot-dip galvanized steel.

E. Dissimilar Metal Coating: Cold-applied asphalt mastic, zinc chromate paint, or other nonconductive, nonabsorptive material.
2.3 FABRICATION

A. To greatest extent possible, complete fabrication, assembly, and finishing before shipment to project site. Disassemble components only as necessary for shipment and installation.
   1. When it is necessary to proceed with fabrication without actual field measurements, provide adequate fabrication tolerances for proper fit.
   2. Maintain accurate plane and angle relations, with hairline fit of contacting members.
   3. Perform fabrication operations, including cutting, fitting, forming, drilling, and grinding of metal work, in manner which prevents damage to exposed finish surfaces.

B. Framing member design to provide for direct attachment to standard commercial drywall partitions. Door frames combined with additional components provide for the acceptance of wood and glass doors, window units and various other architectural abutments to base building construction. Components shall maintain design and physical integrity, throughout entire building.

C. Fabricate partition components in longest lengths possible (4'-0" minimum).

D. Pre-machine jambs and factory prepared for hardware, as specified with concealed reinforcement plates, drilled and tapped as required, and fastened within the frame with concealed screws. Provide corner reinforcements and alignment clips for precise installation in either butt joints or mitered connections.

2.4 FINISH

A. All extrusions shall receive either a thermoset polyester finish or be anodized as indicated or selected by Contractor using procedure that insures color uniformity, specular gloss, hardness, adhesion, chemical and corrosion resistance. All extrusions, any part of which are exposed to view, shall be factory finished for color uniformity.
   1. Polyester Finish: Each component shall be thoroughly pre-treated then receive a multiple-stage electrostatically applied thermoset polyester finish baked to ensure hardness, in compliance with test procedure AAMA 603.8 for pigmented.
   2. Anodized Finish: Provide permanent integral color, either Architectural Class I or II, with a thickness of .4-.7 mils.
      a. Select members for fabrication so that color or texture variation from adjacent anodized aluminum members is not have greater than half the range selected.

B. Standard Finish Symbols:
   1. Bronze BRZ
   2. Gray GRY
   3. Black BLK
   4. White WHT
   5. Clear Anodized ACL
   6. Bronze Anodized ABR

PART 3 - EXECUTION
3.1 PREPARATION

A. Verify and coordinate installation tolerances.

3.2 INSTALLATION

A. Comply with manufacturer's instructions and recommendations for installation of components.

B. Set units plumb, level, and true to line, without warp or rack. Provide proper support and anchor securely in place.

C. Coat all metals that come into contact with masonry, concrete, and treated wood, using one of the materials specified.

D. Fasten partition to suspended ceiling grid with #6 sheet metal screws or other approved fasteners at 48" on-center maximum. All splices and intersections shall be held tight and properly aligned by concealed installation clips. In assembly configurations, clips will be attached to the main structural extrusion components, not to the snap-in or trim member. No exposed screws will be permitted in the finished installation.

E. Do not use exposed fasteners, except where indicated on approved shop drawings. Such fasteners, if approved, shall match finish, color, and texture of metal being fastened.

3.3 ADJUST AND CLEAN

A. Clean surfaces inside and out, promptly after erection and after installation of glass and sealant, taking care to avoid damage to finishes. Remove excess sealant, dirt, and other substances from aluminum surfaces.

B. Touch up frames if required so that such touch is not visible from 4'-0" and to the satisfaction of the Contractor. Protect frames through the remainder of the construction period, to ensure that they will be without damage or deterioration at the time of acceptance.

END OF SECTION
SECTION 08210
WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
1. Solid flush wood doors.
   a. Fire rated and non-rated.
   b. Factory finished facing - wood veneer.
   c. Facing for site painted finish.
   d. Factory pre-fit and hardware prepared.
2. Wood door louvers.
3. Moldings for glazing.
4. Transom panels.

B. Related Work Not Covered by this Specification:
1. Acoustically rated doors.
2. Hollow Core flush wood doors.
3. Wood door frames.
4. Door hardware.
5. Glass and glazing.
6. Painting: Site finishing doors.
7. Special door types such as doors within an acoustic separation and lead lined doors.

1.2 DESCRIPTION


B. Flush Interior Doors (Fire Rated): 1-3/4" thick; solid core construction fire rated as indicated.

1.3 SUBMITTALS

A. Submit samples of transparent finishes for selection of stains, species and cut when not selected by Contractor.

B. Submit schedule for approval by Contractor when door and frame schedules are not described on drawings. The schedule should identify various types or categories of doors and associated frames, unit opening dimensions, fire ratings if any, glass opening sizes, louver sizes, hardware sets, etc.

1.4 QUALITY ASSURANCE

A. Fire Rated Doors:
1. Door Construction: ASTM E 152, NFPA 252, UL 10B, or Warnock Hersey as required by local code official.
2. Installed Door Assembly: NFPA 80 for fire rated class required.
B. AWI Quality Standard, Section 1300; core and facing qualities as specified below.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect and handle products to site per manufacturer's instructions.

B. Accept doors on site in manufacturer's standard packaging. Inspect for damage.

C. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges if stored more than one week.

D. Break seal on site to permit ventilation.

E. Store doors and frames at building site in dry secure place.
   1. Place units on minimum 4 inches high wood blocking, evenly spaced or otherwise arranged to prevent sagging, warping, permanent deformation or other damage to material being stored.
   2. Avoid use of non-vented plastic or canvas shelters which could create a humidity chamber.
   3. If cardboard wrapper on door becomes wet, remove carton immediately.
   4. Provide 1/4 inch spaces between stacked doors to promote air circulation.

1.6 COORDINATION

A. Coordinate with door opening construction, door frame and door hardware installation.

1.7 WARRANTY

A. Provide manufacturer's two (2) year warranty against delamination of veneer, warping beyond specified installation tolerances, defective materials, telegraphing core construction.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Algoma Hardwoods, Inc.


C. Weyerhaeuser Company.

D. Other manufacturers specifically approved by Contractor.

2.2 DOOR CORE CONSTRUCTION

A. Non-Rated Solid Core: AWI Section 1300, PC-Particleboard.

B. Fire Rated Solid Core: AWI Section 1300, Type FD for the required rating.
2.3 DOOR FACING

A. Transparent Veneer:
1. AWI Quality Standard - Custom
2. Cut and species wood: As selected by the Contractor.

B. Painted Facing: Medium density overlay face veneer, for paint finish.

2.4 ADHESIVES

A. Facing Adhesive: Type I - waterproof.

2.5 ACCESSORIES

A. Wood Louvers:
1. Material and Finish: Match door species.
2. Louver Blade: Chevron louver.
3. Louver Free Area: As indicated.

B. Glazing Stops: Wood, of same species as door facing except use rolled steel on rated doors. channel shape; mitered corners; prepared for countersink style screws.

2.6 FABRICATION

A. Fabricate doors in accordance with AWI Quality Standards.
1. Fabricate fire rated doors in accordance with applicable Building Code requirements. Attach fire rating label to the rated doors.

B. Astragals for Double Doors: Steel, T shaped, overlapping and recessed at face edge specifically for double doors.

C. Provide flush doors with edge strips of wood species to match face veneer.

D. Bond edge banding to cores.

E. Factory machine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware.

F. Provide lock blocks for hardware reinforcement at lock edges and closers.

2.7 FINISH

A. Factory finish doors in accordance with AWI Quality Standard Section 1500, to following finish designation:
1. Finish F3 Doors: System #3 performance criteria, transparent, Premium quality.
2. Stain color and sheen as selected.

PART 3 - EXECUTION

3.1 EXAMINATION
A. Verify that opening sizes and tolerances are acceptable.

B. Do not install doors in frame openings that are not plumb or are out of tolerance for size or alignment.

3.2 INSTALLATION

A. Install non-rated doors in accordance with AWI Quality Standard.
   1. Install fire rated doors in accordance with NFPA 80.

B. Pilot drill screw and bolt holes using templates provided.

C. Machine cut for hinges and closers. Core for handsets and cylinders.

3.3 INSTALLATION TOLERANCES

A. Maximum Diagonal Distortion (Warp): 1/4” measured with straight edge or taut string, corner to corner, over an imaginary 36” x 84” surface area.

B. Maximum Vertical Distortion (Bow): 1/4” measured with straight edge or taut string, top to bottom, over an imaginary 36” x 84” surface area.

C. Maximum Width Distortion (Cup): 1/4” measured with straight edge or taut string, edge to edge, over an imaginary 36” x 84” surface area.

3.4 ADJUSTING

A. Adjust door for smooth and balanced door movement.

END OF SECTION
SECTION 08361

SECTIONAL OVERHEAD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Overhead Sectional Doors as shown on the Drawings and as specified herein. All other materials, equipment, and labor needed for a complete and proper installation.
   1. Sectional overhead doors.

B. Specified in other sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
   2. Section 02070 Demolition General Procedures.
   3. Section 02072 Cast-in-Place Concrete Modifications.
   4. Section 02073 Precast Concrete.
   5. Section 06100 Rough Carpentry.
   6. Section 07920 Joint Sealants.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workman who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance for the work of this section.

B. All materials and products for a complete door system shall be provided by the same manufacturer or supplier.

1.3 SUBMITTALS

A. Comply with the pertinent provisions of Section 01340.

B. Submit materials list of the items proposed to be provided under this Section.

C. Submit manufacturer’s specifications with fabrication recommendations.

D. Submit shop drawings showing layout, dimensions fabrication details, installation, anchorage and interface of the work of this Section with the work of adjacent trades.

E. Material samples of each exposed panel for verification of colors, patterns, and finishes.

1.4 PRODUCT HANDLING

A. Comply with the pertinent provisions of Section 01620.
B. Use extreme care in off-loading materials to prevent splitting, breaking, or any other type of damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS: Subject to compliance with requirements, provide products by one of the following:
   1. Clopay Building Products Co.
   2. Haas Door Co.
   3. Overhead Door Corporation.
   4. Raynor Garage Doors.
   5. Wayne-Dalton Corp.
   6. Other Manufacturer meeting specifications as approved by the Contractor.

A. Performance Requirements: Provide sectional overhead doors capable of withstanding the effects of gravity loads and uniform wind-load pressure (velocity pressure) of 20 lb/sq. ft., acting inward and outward, without evidencing permanent deformation of door components. Design sectional overhead door components to operate for not less than 10,000 cycles.

B. Steel Door Sections: Structural-quality carbon-steel sheets complying with ASTM A 653, commercial quality with a minimum yield strength of 33,000 psi and a minimum G60 zinc coating.
   1. Steel Sheet Thickness: Minimum 24 GA.
   2. Exterior Section Face: Flat, grooved, ribbed, or fluted, to suit manufacturer's standards, and matching existing building, if applicable.
   3. Fabricate door panels from a single sheet to provide sections not more than 24 inches high and nominally 2 inches deep. Roll horizontal meeting edges to a continuous, interlocking, weathertight seal, with a reinforcing flange return. Reinforce sections with continuous horizontal and diagonal galvanized steel reinforcement, as required to stiffen door and for wind loading, formed to depth, and bolted or welded in place. Provide reinforcement for hardware attachment.
      a. For insulated doors, provide door sections with continuous thermal-break construction, separating faces of door.
   4. End Stiles: Not less than 16GA galvanized steel channel, welded in place.
   5. Intermediate Stiles: Not less than 16GA galvanized steel, cut to door section profile, spaced at not more than 48 inches o.c., and welded in place.
   6. Bottom Bar: Reinforce bottom section with a continuous channel or angle.
   7. Insulation: Manufacturer's standard rigid cellular expanded polystyrene or polyurethane-foam-type thermal insulation, foamed in place to completely fill inner core of section, pressure bonded to face sheets to prevent delamination under wind load and with maximum flame-spread and smoke-developed indices of 75 and 450, respectively, according to ASTM E 84. Enclose insulation completely, with no exposed insulation material evident.
      a. Steel Sheet Inside Face: min. 24 GA.

C. Tracks: Provide manufacturer's standard, steel track system, sized as follows: for doors up to 14’ x 14’ min. 2”, 13 GA track. For doors 14’ x 14’ and over, 3”, 11GA. Tracks to be designed for lift type indicated and clearances shown, and comply with ASTM A 653, for minimum G60 hot-dipped galvanized zinc coating. Provide complete track assembly including brackets, bracing, and reinforcement for rigid support of ball-
bearing roller guides for required door type and size. Provide 10-ball bearing rollers for heavier duty installations. Slot vertical sections of track at 2 inches o.c. for door-drop safety device. Slope tracks at proper angle from vertical or otherwise design to ensure tight closure at jambs when door unit is closed. Weld or bolt to track supports. Configure tracks for the following lift type as appropriate to job conditions:

1. Match existing installations for building.
2. Vertical lift with no breakaway (use this option first, if not matching existing).
3. Vertical lift with breakaway.
4. High.
5. Standard.

D. Track Reinforcement and Supports: Galvanized steel, complying with ASTM A 36 and ASTM A 123 as required for door size and weight. Support and attach tracks to opening jambs with continuous angle welded to tracks and attached to wall full height of track for no breakaway track. Support horizontal (ceiling) tracks, where occurs, with continuous angle welded to track and supported by laterally braced attachments to overhead structural members at curve and end of tracks. Provide horizontal lateral support to all break away track portions above door head to prevent racking or separating of track.

E. Windows where indicated on drawings: Provide 3-mm clear float glass, complying with ASTM C 1036, Type I, Class 1, Quality q3, for windows in manufacturer's standard size and in arrangement shown. Set glazing in vinyl, rubber, or neoprene glazing channel for metal-framed doors as required. Provide removable stops of same material as door section frames.

F. Hardware: Manufacturer's standard heavy-duty, corrosion-resistant hinges, rollers, push/pull handles for push-up-operated or emergency-operated doors and locking device with Cremone-type locking bar, engaging slots in tracks at both jamb sides, operable from inside and outside.

G. Counterbalance Mechanism: Consisting of adjustable-tension torsion springs, fabricated from oil-tempered-steel wire complying with ASTM A 229, Class II, mounted on a cross-header tube or steel shaft. Connect to door with galvanized aircraft-type lift cables, with cable safety factor of at least 5 to 1, wound around cast-aluminum or gray-iron casting grooved cable drums. Mount counterbalance mechanism with manufacturer's standard ball-bearing brackets at each end of shaft and at intermediate points as required for support. Include cable safety device, spring anchor support bracket, and spring bumper.

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

I. Thermoset Finish for Steel and Galvanized Steel: Apply manufacturer's standard baked finish consisting of primer and topcoat according to coating manufacturer's written instructions for cleaning, pretreatment, application, thermosetting, and minimum dry film thickness.

J. Push-up Operation: Design counterbalance mechanism so required lift or pull for door operation does not exceed 25 lb/ft.
PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 COORDINATION

A. Coordinate the work of this Section with other trades to assure proper and adequate provision for those trades to interface with this work and schedule this work so as not to delay the installation of other trades.

END OF SECTION
SECTION 08810
INTERIOR GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Glass and glazing for interior rated and non rated door vision panels and borrowed lights.
   2. Provide glazing accessories required for installation.

B. Related Work Not in These Specifications:
   1. Exterior Glazing.
   2. Unframed and framed mirrors.

1.2 DESCRIPTION

A. Provide glass products to conform to code requirements including:
   1. Wire glass in rated doors.
   2. Safety glass in doors and lights within limits required by codes.

1.3 QUALITY ASSURANCE


B. Fire-Resistance-Rated Wire Glass: Wire glass products tested per ASTM E 163 (UL 9) and labeled and listed by UL or other testing and inspecting agency.

C. Installation Standard - Flat Glass Marketing Association's "Glazing Manual".

1.4 WARRANTY

A. Warranty on Laminated Units: Provide laminated glass manufacturer's written warranty, agreeing to, within specified warranty period, furnish FOB project site replacement units for laminated glass units which have any evidence of delamination. Warranty period shall be five (5) years after date of substantial completion.

PART 2 - PRODUCTS

2.1 GLASS PRODUCTS

A. Clear Float Glass: 1/4-inch thick, ASTM C 1036 Type I, Quality q3, clear.

B. Safety Glass:
   1. Tempered Glass: 1/4" thick minimum, ASTM C 1048 Type I, class 1, quality q3, fully tempered grade B; comply with ANSI Z97.1; manufactured by horizontal process with roll wave distortion parallel to edge.
   2. Laminated Glass: Two lights of Prime Glass laminated together with 0.060" clear polyvinyl butyral interlays.
C. Wire Glass: Type II (rolled), class 1 (translucent), quality (glazing); complying with ANSI Z97.1; 1/4” thick; polished both sides with diamond mesh pattern.

2.2 ACCESSORIES

A. Setting Blocks: Neoprene or EPDM, 70-90 Shore A durometer hardness, compatible with sealant.

B. Glazing Tape:
   1. Preformed Butyl-polyisobutylene rubber.
   2. Acceptable Products:
      a. PTI 606; Protective Treatments, Inc.
      b. Tremco Polyshim Tape; Tremco.
      c. Chem-Tape 40; Woodmont Products, Inc.

C. Glazing Gaskets:
   1. Lock-strip gaskets; D. S. Brown Co or approved equal.
   2. Preformed gaskets; Tremco or approved equal.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect framing and report unsatisfactory conditions to the Architect. Starting of installation constitutes acceptance of existing conditions.

3.2 GLAZING

A. Protect glass from edge damage during handling and installation, and subsequent operation of glazed components of the work. During installation, discard units with significant edge damage or other imperfections.

B. Install glass for fire rated works in accordance with manufacturer’s requirements for rated glazing.

C. Install setting blocks of proper size in sill rabbet, located 1/4th of glass width from each corner.

D. Miter cut and bond gasket ends together at corners where gaskets are used for channel glazing. Use glazing tape on opposite side of gasket.

3.3 PROTECTION & FINAL CLEANING

A. Protect glass immediately upon installation, with crossed streamers attached to framing, not the glass.

B. Replace broken, chipped, cracked, abraded or damaged glass.

C. Remove non-permanent labels. Clean both faces of glass four days before substantial completion in accordance with glass manufacturer’s recommendations.
END OF SECTION
SECTION 08920
ALUMINUM STOREFRONT SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Exterior window wall entrance construction and aluminum doors primarily for new installations in existing building openings.
   1. Entrance and Strip Window Framing: Aluminum stick thermal break framing, exterior pressure plate flush glazing with snap on covers for concealing fasteners.
   2. Anodized aluminum finish.
   3. Narrow or medium stile aluminum doors with fully tempered glass.
   4. Insulated glazing lights.
   5. Door hardware.

B. Specified in Other Sections:
   1. Metal framing modifications Section 02075
   2. Interior Aluminum frames Section 08122
   3. Interior Glazing Section 08810

1.2 DESCRIPTION/PERFORMANCE REQUIREMENTS

A. System should first match primary system existing in the building in terms of framing types, sizes, finishes, colors, type, etc. Performance requirements listed still apply to greatest extent possible even when matching existing systems. Systems not required to match any existing installations shall comply with entire specification.

B. System Description: Provide aluminum entrance and storefront systems capable of withstanding loads and thermal and structural movement requirements indicated without failure, based on testing manufacturer's standard units in assemblies similar to those indicated for this Project. Failure includes air infiltration and water penetration exceeding specified limits; and framing members transferring stresses, including those caused by thermal and structural movement, to glazing units.

C. Wind Loads: Provide entrance and storefront systems, including anchorage, capable of withstanding wind-load design pressures calculated according to requirements of authorities having jurisdiction or the American Society of Civil Engineers' ASCE 7, "Minimum Design Loads for Buildings and Other Structures," 6.4.2, "Analytical Procedure," whichever are more stringent.
   1. Deflection of framing members in a direction normal to wall plane is limited to 1/175 of clear span or 3/4 inch, whichever is smaller, unless otherwise indicated.
   2. Static-Pressure Test Performance: Provide entrance and storefront systems that do not evidence material failures, structural distress, failure of operating components to function normally, or permanent deformation of main framing members exceeding 0.2 percent of clear span when tested according to ASTM E 330.
      a. Test Pressure: 150 percent of inward and outward wind-load design pressures.
b. Duration: As required by design wind velocity; fastest 1 mile of wind for relevant exposure category.

D. Dead Loads: Provide entrance- and storefront-system members that do not deflect an amount which will reduce glazing bite below 75 percent of design dimension when carrying full dead load. Provide a minimum 1/8-inch clearance between members and top of glazing or other fixed part immediately below. Provide a minimum 1/16-inch clearance between members and operable windows and doors.

E. Air Infiltration: Provide entrance and storefront systems with permanent resistance to air leakage through fixed glazing and frame areas of not more than 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a static-air-pressure difference of 1.57 lbf/sq. ft.

F. Water Penetration: Provide entrance and storefront systems that do not evidence water leakage through fixed glazing and frame areas when tested according to ASTM E 331 at minimum differential pressure of 20 percent of inward-acting wind-load design pressure as defined by ASCE 7, "Minimum Design Loads for Buildings and Other Structures," but not less than 6.24 lbf/sq. ft.

G. Thermal Movements: Provide entrance and storefront systems, including anchorage, that accommodate thermal movements of systems and supporting elements resulting from the following maximum change (range) in ambient and surface temperatures without buckling, damaging stresses on glazing, failure of joint sealants, damaging loads on fasteners, failure of doors or other operating units to function properly, and other detrimental effects.
1. Temperature Change (Range): 120 F, ambient; 180 F, material surfaces.

H. Condensation Resistance: Provide storefront systems with condensation resistance factor (CRF) of not less than 45 when tested according to AAMA 1503.1.

I. Average Thermal Conductance: Provide storefront systems with average U-values of not more than 0.63 Btu/sq. ft. x h x F when tested according to AAMA 1503.1.

J. Product Options: Drawings indicate size, profiles, and dimensional requirements of entrance and storefront systems and are based on the specific systems indicated. Other manufacturers’ systems with equal performance characteristics may be considered. Refer to Division 1 Section "Substitutions."

1.3 SUBMITTALS

A. Submit manufacturer’s data, specifications, installation instructions and accessory material description. Include independent test data showing compliance with requirements of specifications for finishes and structural requirements.

B. Submit shop drawings showing adaptation of standard system to requirements of the work. Include hardware schedule and cut sheet for entrance systems as appropriate.

C. Submit 1’ square composite section of typical joint detail. Include all frame types glazing samples and color samples representing full range of color variations possible.
1.4 QUALITY ASSURANCE

A. Standards:

   B. All material and details to conform to recommendations of framing system as indicated on manufacturer's published technical data and shop drawings.

1.5 DELIVERY, STORAGE AND HANDLING

1. Support framing members at points that will not warp or distort framing.

1.6 SPECIAL PROJECT WARRANTIES

B. Framing System: Provide written warranty signed by the framing manufacturer and framing fabricator guaranteeing framing system against leakage and defective materials. Period of warranty five (5) years from substantial completion.

1.7 COORDINATION

A. Coordinate with hardware consultant to provide for reinforcing and cutouts required for hardware to be field installed.

PART 2 – PRODUCTS

2.1 ACCEPTABLE PRODUCTS

A. Framing Basis of Design: Kawneer Company, Inc.
      a. 2" sight line on vertical and horizontal mullions.
   3. EFCO Corporation.

2.2 MATERIALS


B. Brackets and Reinforcement: High strength aluminum or non magnetic stainless steel. ASTM A 386 galvanized steel may be used in concealed locations when authorized.

C. Flashing: 26 gauge soft stainless steel.

D. Heat Treated Glass: Provide safety glass as shown on drawings and as required by local codes. 1/4" thick minimum, FS DD-G-1403, manufactured by horizontal process
with roll wave distortion parallel to edge, style 1 uncoated surface, type 1 float, quality q3 glazing select:

1. Class:
   a. Clear-1

2. Grade:
   a. Heat Strengthened-A
   b. Fully Tempered-B

E. Annealed Glass: 1/4” thick minimum, Fed. Spec. DD-G-451 Type 1, Quality q3:

F. Insulated Glass: Provide preassembled units consisting of organically sealed panes of glass enclosing a hermetically sealed dehydrated air space and complying with ASTM E 774 for performance classification indicated as well as with other requirements specified for glass characteristics, air space, sealing system, sealant, spacer material, corner design and desiccant.

   1. For properties of individual glass panes making up units, refer to product requirements specified elsewhere in this section applicable to types, classes, kinds and conditions of glass products indicated.

   2. Provide heat-treated panes of kind and at locations or, if not indicated, provide heat-strengthened panes where recommended by manufacturer for application indicated and tempered where indicated or where safety glass is designated or required.

   3. Performance Classification per ASTM E 744: Class A.
      a. Thickness of Each Pane: 1/4”.
      b. Air Space Thickness: 1/2”.
      c. Sealing System: Manufacturer’s standard.
      d. Spacer Material: Manufacturer’s standard metal.
      e. Desiccant: Manufacturer’s standard; either molecular sieve or silica gel or blend of both.
      f. Corner Construction: Manufacturer’s standard corner construction.

G. Uncoated Insulating Glass Units: Manufacturer’s standard units complying with the following requirements:

H. Provide special edge preparation of glass required by conditions.

2.3 HARDWARE

   A. Provide hinges and thresholds for handicap and heavy duty usage. Finishes to match finish of aluminum framing except where otherwise specified.

2.4 FABRICATION (IF NOT REQUIRED TO MATCH EXISTING)

   1. Fabricate to maintain thermal break with only the pressure plate metal fasteners accessories bridging the break.

2.5 ALUMINUM FINISH
PART 3 – EXECUTION

3.1 INSTALLATION

1. Plumb, level or dimensioned angle:
   a. 1/8” in any 10’ Length
   b. 1/4” in any overall length of any member

3.2 DOOR INSTALLATION

A. Drilled tap frames and doors to install surface mounted hardware. Install hardware in accordance with hardware manufacturer’s instructions using concealed fasteners.

3.3 CLEANING AND PROTECTION

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Metal framing and gypsum board for partitions and ceilings.
      a. Rated partition walls.
      b. Non-rated metal separation partitions.
      c. Above ceiling closure of partitions.
   2. Gypsum Board construction standards.
   3. Joint treatment products and accessories for installation and trimming of gypsum board partitions and ceilings.
   4. Light Gage Metal Framing.
   5. Building Insulation

B. Related Work Not Covered by this Specification:
   1. Rough Carpentry.
   2. Prefinished Gypsum Wall Panels.
   4. Exterior soffit construction.
   5. Rated ceiling construction.

1.2 DESCRIPTIONS

A. The following applications are typical for the described limitations. For other conditions select material in accordance with the performance and fire rating requirements specified below.
   1. Metal stud partition framing: Metal studs at size and spacing indicated in Tables 09260-1 and 09260-2, this section. Reference these tables for wall construction as indicated on drawings.
   2. For estimating purposes, wall construction details 09260-A through 09260-G and 09260-1 through 09260-5 are provided in this specification. Details provided on drawings for specific projects take precedence over details provided in this manual.
   3. 1 Hour Fire Rated Partitions: Minimum 3-5/8" deep studs at 24" spacing with 5/8" fire rated gypsum board both sides, or minimum 2-1/2" deep studs at 24" spacing with 1/2" fire rated gypsum board both sides including insulation and conforming to Underwriters Laboratory U419 or U465.
   4. 2 Hour Fire Rated Partitions: Minimum 1-5/8" deep studs at 24" spacing with 2 layers of 5/8" fire rated gypsum board both sides and conforming to Underwriters Laboratory U419.
   5. 3 Hour Fire Rated Partitions: Minimum 1-5/8" deep studs at 24" spacing with 3 layers of 1/2" or 5/8" fire rated gypsum board both sides and conforming to Underwriters Laboratory U419 or U435.

B. Performance Requirements: Select steel studs in accordance with the manufacturer's standard load tables and following design pressures and deflections:
   1. At stairs, elevator hoistways, and other vertical shafts: l/120 at 10 psf.
2. At ground floor lobbies: l/120 at 15 psf.
3. At partitions to receive stone cladding, lath and plaster, or veneer plaster: l/360 at 15 psf.
4. At all other partitions: l/180 at 5 psf.
5. Use studs per the attached schedule for industrial buildings.
6. Submittal properties for studs.
7. Submit wall design & calculations stamped by a registered structural engineer if contractor intends to vary from design.

C. Fire-Resistance Rating: Provide assemblies identical to design designations in UL "Fire Resistance Directory", Factory Mutual Research Corporation or other testing agencies acceptable to authorities having jurisdiction.

1.3 QUALITY ASSURANCE

A. Gypsum Associations Standards:
1. GA-201 - Using Gypsum Board for walls and Ceilings.
2. GA-216 - Recommended Specifications for the Application and Finishing Gypsum Board.
3. GA-219 - Recommendations for Installation of Steel Door Frames in Steel Stud Gypsum Board Fire Rated Partitions.

B. Installation Standards:

C. Tolerances: Not more than 1/16" between adjacent boards before finishing. Not more than 1/8" in 10’ deviation from true plane, plumb and level in finished work.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Packaging and Shipping: Have materials shipped in manufacturer's original packages showing manufacturer's name and product brand name.

B. Storage and Protection: Store materials inside and protected from damage by the elements. Protect ends, edges, and faces of gypsum boards from damage. Protect steel studs and accessories from bending.

1.5 PROJECT CONDITIONS

A. Environmental Requirements: Establish and maintain application and finishing environment in accordance with ASTM C 840.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Metal Studs
1. Basis of Design: Dietrich
2. Clarke
3. Other manufacturers meeting specifications and acceptable to the Contractor.

B. Gypsum Board
1. Gold Bond Building Products
2. United States Gypsum Company
3. Domtar Gypsum
4. Georgia Pacific Corporation

C. Building Insulation
   1. Knauf Fiber Glass Insulation
   2. Owens Corning Fiberglass Corp.
   3. Johns Manville
   4. CertainTeed Corp.

2.2 SUPPORT FRAMING

A. Metal Framing: ASTM C 645, galvanized steel.
   1. Studs: C shaped.
   2. Runners: Match studs; type recommended by stud manufacturer for floor and ceiling support of studs, and for vertical abutment of drywall work at other work.

B. Furring Members: ASTM C 645; galvanized hat shaped and C-shaped.
   1. Fasteners: Type and size recommended by furring manufacturer for application.
   2. Furring Anchors: ASTM C 754 16 gauge galvanized wire ties, manufacturers standard wire-type clips, bolts, nails or screws.

C. Floor and Ceiling Runners: L shaped runner, weighing 545 lbs. per 1000 lin. ft. with min. base steel of 0.0329 in., galvanized.

   1. Track Members: Hat shaped profile, 2 ½” or 3 5/8” as indicated on drawings. Pre-punched holes to receive studs at 8” centers.
   2. Accessories: Splice plates, endcaps, and angled corner plates as required for complete installation.
   3. Colors/Finish: White, baked-on polyester paint in shade most closely matching adjacent ceiling grid.
   4. Other ceiling track systems may be accepted and approved by contractor.

   1. Main Runners: Steel channels with rust inhibitive paint finish, hot or cold rolled.
      a. 7/8” 22 gauge channels.
   3. Hanger Rods and Flats: Mild steel with zinc or equally rust inhibitive coating for rods and zinc or rust-inhibitive paint finish for flats.
   4. Angle-Type Hangers: Not less than 7/8” x 7/8” x 16 ga. galvanized steel formed angles, with bolted connections and 5/16” diameter bolts.
   5. Hanger Anchorage Devices: Screws, clips, bolts, concrete insets or other devices.

2.3 GYPSUM BOARD
A. Fire-Rated Board: ASTM C 36, Type X. gypsum core wall panel with additives to enhance fire resistance of core and surfaced with paper on front, back, and long edges.
   1. Thickness: 5/8 in.
   2. Edges: Tapered.
   3. Width: 4 ft.
   4. Length: 6 ft. through 16 ft.

B. Water-Resistant Gypsum Backing Board: ASTM C 630 gypsum core wall panel with water-resistant core; surfaced with water repellant paper on front, back, and long edges:
   1. Thickness: 5/8 in.
   2. Edges: Tapered.
   3. Width: 4 ft.
   4. Length: 6 ft. through 16 ft.

C. Gypsum Ceiling Board: A gypsum core ceiling panel with additives to enhance the sag resistance of the core and surfaced with paper on front, back, and long edges
   1. Thickness: 1/2 in.
   2. Width: 4 ft.
   3. Length: 6 ft. through 16 ft.

2.4 JOINT TREATMENT

A. Tape: 2-1/16 in. wide paper reinforcing tape.

B. Compound: Setting type job mixed chemical-hardening compound.

2.5 CORRUGATED METAL FORM DECK

A. Deck: 9/16" x 28 GA. Galvanized metal form deck, ASTM A611, SQ

2.6 METAL WALL PANELS

A. Panels: 1-1/2" x 26 GA. Galvanized metal wall panels.

2.7 ACCESSORIES

A. Corner Bead: ASTM C 1047 formed galvanized steel square nose corner beads, min. base steel 0.014 in. thick.

B. Casing Bead: ASTM C 1047 formed galvanized steel trim, min. base steel 0.014 in. thick. Provide L-type edge trim beads, U-type edge trim beads, and special L-kerf-type edge trim beads.

C. Control Joint: ASTM C 1047 extruded vinyl formed with V shaped slot covered with removable flexible vinyl strip.

D. Screws: ASTM C 954 or ASTM C 1002 or both with heads, threads, points, and finish recommended by manufacturer.
E. Nails: ASTM C 514 with heads, lengths, configurations, and finish as recommended by the manufacturer.

F. Acoustical Sealant: Nondrying, nonhardening, nonskinning, nonstaining, nonbleeding, gunnable type recommended by manufacturer.

2.8 BUILDING INSULATION

A. Thermal Batt Insulation
   1. Unfaced glass fiber thermal insulation complying with ASTM C 665, Type I.
   2. Size: Size to match width of stud used.
   3. Surface Burning Characteristics per ASTM E 84: Maximum Flame Spread – 25, Maximum Smoke Developed – 450, or per local building code.

B. Sound Attenuation Batts
   1. Unfaced glass fiber acoustical insulation complying with ASTM C 665, Type I.
   2. Size: Size to match width of stud used.

PART 3 - EXECUTION

3.1 PREPARATIONS FOR METAL SUPPORT SYSTEMS

A. Ceiling Anchorages: Coordinate work with structure to ensure that inserts, deck hanger clips, and other structural anchorage provisions (if any) have been installed to receive ceiling hangers.

3.2 INSTALLATION OF METAL SUPPORT SYSTEMS

A. Metal Support Installation Standard: ASTM C 754.

B. Wall/Partition Support Systems:
   1. Install supplementary framing, blocking, and bracing at terminations in the work and for support of fixtures, equipment, services, heavy trim, grab bars, toilet accessories, furnishings, vertical ladders and similar work.
   2. Isolate stud system from structural loading to system, both horizontally and vertically. Provide slip joints to attain lateral support and avoid axial loading.
   3. Install runner tracks at floors, ceiling and structural walls and columns where gypsum drywall stud system abuts other work. Align runner tracks to partitions layout at both floor and ceiling. Secure runner tracks as recommended by stud manufacturer without exceeding a 24” o.c. spacing.
   4. Terminate partition stud system and substantially anchor at ceilings, except where indicated to be extended to structural support of substrate above.
   5. Frame door openings to comply with details and recommendations of gypsum board manufacturer. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames. Install runner track section (for jack studs) at head and secure to jamb studs.
   6. Install minimum 20 gauge studs at each jamb for doors.
   7. For metal wall systems install hat channels on both sides of studs at a maximum spacing of 4'-0" on center install additional hat channel above all doors and extend 48" beyond end of door.
C. Ceiling Support Suspension Systems:
1. Secure hangers to structural supports by connecting directly to structure where possible, otherwise connect to inserts, clips and other anchorage devices or fasteners as indicated.
2. Space main runners 4'-0" o.c. and space hangers 4'-0" o.c. along runners.
3. Level main runners to a tolerance of 1/4" in 12'-0", measured both lengthwise on each runner and transversely between parallel runners.
4. Wire-tie or clip furring members to main runners and to other structural supports.
5. Direct-hung Metal Support System: Attach perimeter wall track or angle wherever support system meets vertical surfaces. Mechanically join support members to each other and butt-cut to fit into wall track.
6. Install auxiliary framing at termination of drywall work, and at openings for light fixtures and similar work, as required for support of both the drywall construction and other work indicated for support thereon.

3.3 INSULATION INSTALLATION
A. Comply with manufacturer’s instructions for particular conditions of installation in each case.
B. Batts may be friction-fit in place until the interior finish is applied. Install batts to fill entire stud cavity. Walls with penetrations require that insulation be carefully cut to fit around outlets, junction boxes and other irregularities.

3.4 GYPSUM BOARD INSTALLATION
A. Gypsum Board Application and Finishing Standards: ASTM C 840 and GA216.
B. Space fasteners in gypsum boards in accordance with referenced standards and manufacturer’s recommendation but do not exceed 12" spacing.
C. Tolerances:
1. Do not exceed 1/16-inch offset at joints between gypsum board panels in any direction.
2. Tolerances for Drywall Work: Do not exceed variation of 3/16-inch in 8'-0", and 1/8-inch in 4'-0", from plumb, level and flat (all directions) and do not exceed 1/6-inch offset of planes at joints between panels; shim panels as necessary to comply with tolerances.
D. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 1'-0" in alternate courses of board.
E. Install wall/partition boards vertically to avoid end-butt joints wherever possible.
F. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force into place.
G. Locate either edge or end joints over supports, except in horizontal applications or where intermediate supports, or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered
edges against cut edges or ends. Stagger vertical joints over different studs at opposite sides of partitions.

H. Attach gypsum board to supplementary framing and blocking. Provide for additional support at openings and cutouts.

I. Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories.

J. Cover both faces of partition framing with gypsum board in concealed spaces (above ceilings, etc.) or otherwise brace stud flanges, except in chase walls which are braced internally.

K. For walls constructed of metal form deck or metal panels install material horizontally. Attach with galvanized fasteners. Refer to detail included at the end of this section.

L. Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4” to 1/2” space and seal joints with acoustical sealant.
   1. Trim edge with J-type semi-finishing edge trim.

3.5 METHODS OF GYPSUM DRYWALL APPLICATION

A. Single Layer Application:
   1. On ceilings apply gypsum board prior to wall board application unless not possible.
   2. On partitions/walls apply gypsum board vertically (parallel), unless otherwise indicated, and provide sheet lengths which will minimize end joints.
   3. On z-furring members apply gypsum board vertically (parallel) with non end joints. Locate edge joints over furring members.
   4. Apply gypsum boards to support with screws.

B. Double Layer Fastening Methods: Apply base layer of gypsum board and face layer to base layer in accordance with applicable U.L. Requirement and as follows:
   1. Where required for ratings, fasten both base layers and face layers separately to supports with screws.
   2. Otherwise fasten base layers with screws or nails and face layer with adhesive and supplementary fasteners.

3.6 INSTALLATION OF DRYWALL TRIM ACCESSORIES

A. Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges in accordance with manufacturer's instructions and recommendations.

B. Install metal corner beads at external corners of drywall work.

C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, and at ceilings where eliminator track is not used. Provide type with face flange to receive joint compound. Install L-type trim where work is tightly abutted to other work and install special kerf-type where other work is kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).
3.7 FINISHING OF GYPSUM BOARD

A. Joint Treatment: ASTM C 840.
   1. Treat gypsum board joints (both directions), flanges of trim accessories, penetrations, fastener heads, surface defects and elsewhere as required to prepare work for decoration. Prefill open joints and rounded or beveled edges, if any, using type of compound recommended by manufacturer. Finish all exposed gypsum board.
   2. Apply joint tape at joints between gypsum boards. Where open spaces of more than 1/16-inch width occur between abutting drywall units, prefill joints with joint compound and allow prefill to dry before application of joint tape.
   3. Apply joint compound in three coats not including prefill of openings in base, and sand between last two coats and after last coat.

3.8 PROTECTION OF WORK

A. Provide final protection and maintain conditions, in a manner suitable to installer, which ensures gypsum drywall work being without damage or deterioration at time of substantial completion.
WALL TYPE 'A'

WALL TO CEILING WITH
GYPSUM BOARD SHEATHING
N13
WALL HT: 9'-1" TO 10'-0"

SUSPENDED ACOUSTICAL CEILING PANEL AND GRID

ELIMINATOR TRACK OR OTHER APPROVED SYSTEM FASTENED TO CLG. GRID w/ BUILT IN TRIM EDGE

FILL WALL FULL THICKNESS w/ BATT INSULATION PER PROJECT REQUIREMENTS.

2⅜" 20 GAUGE METAL STUDS • 24" O.C. w/ ⅝" GYP. BD. EACH SIDE.

METAL RUNNER FASTENED TO FLOOR AT 2'-0" O.C. REFERENCE 09260-0: TABLE 3 FOR METHOD OF ATTACHMENT

WALL BASE

FLOOR FINISH

WALL TYPE 'AI'

WALL TO CEILING WITH GYPSUM BOARD SHEATHING NTS

09260-10
WALL TYPE 'B'
1 HOUR RATED PARTITION WALL

MAX WALL HT: 15'-0"

METAL STUD TOP TRACK AT TOP OF WALL. PROVIDE FIRE CAULK WHERE GYP. BD. MEETS DECK.
PROVIDE FOR DEFLECTION PER 09260- DETAIL 3 AND 09260- DETAIL 4 WHERE WALL MEETS ROOF DECK OR STRUCTURE

SUSPENDED ACOUSTICAL CEILING PANEL AND GRID

2½" 18 GAUGE METAL STUDS
Ø 16" O.C. W/ ½" TYPE 'X'
GYP. BD. EACH SIDE. UL DESIGN NO. U419
(ONE-HOUR).

FILL WALL W/ BATT INSULATION PER PROJECT REQUIREMENTS. (MIN. 1½" FIBERGLASS BATT INSULATION)

METAL RUNNER FASTENED TO FLOOR AT 2'-0" O.C.
REFERENCE 09260- TABLE 3 FOR METHOD OF ATTACHMENT

WALL BASE
FLOOR FINISH

Duke Construction
Interior Finish Master Specification
October 3, 2005
WALL TYPE 'C'

SMOKE TIGHT PARTITION W/ ELIMINATOR TRACK

FLOOR FINISH

WALL BASE

METAL RUNNER FASTENED TO FLOOR AT 2'-0" O.C. REFERENCE 09260- TABLE 3 FOR METHOD OF ATTACHMENT

2 1/2" 20 GAUGE METAL STUDS @ 24" O.C. W/ 1/8" GYP. BD. EACH SIDE.

FILL WALL W/ BATT INSULATION PER PROJECT REQUIREMENTS.

EXTEND GYP. BD. TO DECK ONE SIDE

SUSPENDED ACOUSTICAL CEILING PANEL AND GRID.

METAL STUD BRACING @ 48" O.C. ATTACH TO STRUCTURE ABOVE. FOR 2 1/2" STUD WALLS, ATTACH TO WALL AT MAXIMUM 10'-0" A.F.F.

METAL STUD TOP TRACK AT TOP OF WALL. INSTALL SEALANT WHERE GYP. BD. MEETS DECK. PROVIDE FOR DEFLECTION PER 09260- DETAIL 1 AND 09260- DETAIL 2 WHERE WALL MEETS ROOF DECK OR STRUCTURE

MAX WALL HT: 15'-0"
WALL TYPE 'D'  
NON RATED OFFICE / WAREHOUSE SEPARATION WALL

FLOOR FINISH  
WALL BASE  
METAL RUNNER FASTENED TO FLOOR AT 2'-0" O.C.  
REFERENCE 09260- TABLE 3 FOR METHOD OF ATTACHMENT  
METAL STUDS W/ 3/8" GYP. BD. EACH SIDE. STUD SIZE AND SPACING PER 09260- TABLE 1 AND 09260- TABLE 2  
FILL WALL W/ BATT INSULATION PER PROJECT REQUIREMENTS.  
SUSPENDED ACOUSTICAL CEILING PANEL AND GRID.  
EXTEND GYP. BD. TO DECK ON WAREHOUSE SIDE AND 6" ABOVE CEILING ON OFFICE SIDE.  
METAL STUD TOP TRACK AT TOP OF WALL. PROVIDE FOR DEFLECTION PER 09260- DETAIL 1 AND 09260- DETAIL 2 WHERE WALL MEETS ROOF DECK OR STRUCTURE  
OFFICE SIDE  
WAREHOUSE SIDE
WALL TYPE 'E'
LOW WALL
NTS

CAP AT TOP OF WALL. REFER TO ARCHITECTURAL DETAIL FOR PROFILE.

FASTEN STUDS TO UNISTRUT WITH SELF-TAPPING SCREWS.

NOTE: ELECTRICAL CONTRACTOR TO INSTALL CONDUIT OR FLEX IF REQUIRED.

CORE DRILL 3" DIA. HOLE TO BOTTOM OF CONCRETE SLAB. DO NOT PENEatrATE METAL DECKING. LEVEL, PLUMB AND BRACE UNISTRUT UNTIL NON-SHRINK GROUT IS FULLY SET.

METAL TOP TRACK WITH CONTINUOUS WOOD NAILER.
MAX WALL HT.: 9'-0" AFF.

2½" 26 GAUGE METAL STUDS @ 24" O.C.W 5/8" GYP. BD. EACH SIDE.

INSTALL AND ANCHOR UNISTRUT AT ENDS OF LOW WALLS AND @ 4'-0" O.C. FILL VOID AT ANCHOR TO FLOOR LEVEL WITH NON-SHRINK GROUT.

SECURE BOTTOM TRACK WITH TWO 1½" RAWL DRIVE ANCHORS @ 12" O.C.

WALL BASE

FLOOR FINISH
WALL TYPE 'F'
NON RATED FULL HEIGHT OR TENANT DEMISING PARTITION

MAX WALL HT. 15'-0"

Metal stud top track at top of wall. Provide for deflection per 03260- Detail 1 and 03260- Detail 2 where wall meets roof deck or structure.

Metal stud bracing @ 48" O.C. Attach to structure above. Attach to wall at maximum 10'-0" A.F.F.

Fill wall full thickness w/ batt insulation.

2½" 20 GA. Metal studs @ 24" O.C. w/ ½" gyp. bd. each side.

Metal runner fastened to floor at 2'-0" O.C. Reference 03260: Table 3 for method of attachment.

Wall base

Floor finish

09260-15
WALL TYPE 'F1'

NON RATED TENANT DEMISING
PARTITION EXTENSION

09260-16
WALL TYPE 'F2'
NON RATED FULL HEIGHT OR WAREHOUSE DEMISING PARTITION NTS

09260-17
WALL DESIGN

26 GA. PAINTED (WHITE) METAL SIDING OR 28 GA. CORRUGATED FORM DECK, RUN VERTICAL ON METAL STUDS AND RESILIENT Furring Channels (R.F.C.). EXTEND METAL PANELS AND STUDS TO DECK ABOVE.

WORK FROM TOP DOWN
INSTALL FULL LENGTH SHEETS OF SIDING FROM ROOF DECK DOWN.
CUT SHEETS TO BE INSTALLED AT BOTTOM OF PARTITION

R.F.C. ON SIDING SIDE OF WALL: START @ 4'-0" AFF TO CENTER AND CONTINUE EVERY 4'-0" VERTICALLY TO TOP OF WALL.

METAL STUD TOP TRACK AT TO P OF WALL. PROVIDE FOR DEFLECTION PER DETAILS 09260-DETAIL 5 WHERE WALL MEETS ROOF DECK OR ROOF STRUCTURE.

METAL STUDS W/ ½" GYP. BD. EACH SIDE. STUD SIZE AND SPACING PER 09260- TABLE 1 AND 09260- TABLE 2

R.F.C. ON FRAMED ONLY SIDE: START @ 2'-0" AFF @ CONTINUE EVERY 4'-0" O.C.

METAL RUNNER FASTENED TO FLOOR AT 2'-0" O.C. REFERENCE 09260- TABLE 3 FOR METHOD OF ATTACHMENT

FLOOR FINISH

WALL TYPE 'G'

FULL HEIGHT OR TENANT DEMISING PARTITION - METAL SIDING

09260-18
DETAIL 1

TOP OF NON-RATED PARTITION
WALL AT ROOF DECK

NTS

BOTTOM OF ROOF DECK

3" GAP BETWEEN TOP OF STUD AND TOP OF HEAD TRACK

3/8" GYP. BD. STOP 3" FROM BOTTOM OF ROOF DECK

NO FASTENERS IN STUD RETURN OR GYP. BD. 6" DOWN FROM TOP OF TRACK.

METAL STUDS w/ 3/8" GYP. BD. EACH SIDE. STUD SIZE AND SPACING PER TABLE 9260-M AND 9260-N
NOTE:
PROVIDE GYP. BD. CLOSURE ON ONE OR BOTH SIDES OF WALL PER PROJECT REQUIREMENTS.

NOTE:
WHERE WALL IS PERPENDICULAR TO DECK, FILL VOIDS BETWEEN GYP. BD. AND DECK WITH SAFING INSULATION.

METAL STUDS W/ 1/2" GYP. BD. EACH SIDE STUD SIZE AND SPACING PER TABLE 9260-M AND 9260-N

4" DEEP HEAD TRACK

NO FASTENERS IN STUD RETURN OR GYP. BD. 1" DOWN FROM TOP OF TRACK.

STOP GYP. BD. 3" FROM ROOF OR FLOOR JOIST/GIRDER

DETAILED 2
NON-RATED WALL CLOSURE AT ROOF JOIST OR JOIST GIRDER
WALL PARALLEL TO DECK
NIS 09260-20
NOTE:
WHERE WALL PERPENDICULAR TO DECK, FIT GYPSUM BOARD TIGHT TO DECK

METAL ROOF OR FLOOR DECK.

FIRE RATED CAULK OR SEALANT PER LOCAL CODE.

Z-CLIP - 2" WIDTH (WALL PARALLEL TO DECK)

FIRE TRAK "SHADOLINE" OR APPROVED EQUAL. UL RATING AS REQ'D FOR WALL ASSEMBLY.

FIRE TRAK SLIP CLIP OR SIMILAR ATTACHMENT ALLOWING FOR VERTICAL MOVEMENT.

METAL STUDS W/1/4" TYPE "X" GYP. BD. EACH SIDE STUD SIZE AND SPACING PER TABLE 9260-M AND 9260-N

DETAIL 3
RATED WALL CLOSURE AT TOP OF ROOF DECK
NTS
09260-21
NOTE:
WHERE WALL IS PERPENDICULAR TO DECK, FIT GYPSUM BOARD TIGHT TO DECK

FIRE RATED CAULK OR SEALANT PER LOCAL CODE

ROOF OR FLOOR JOIST/GIRDER

METAL RUNNERS

FRAME AS NECESSARY TO CLEAR JOIST OR JOIST GIRDER

FIRE TRAK "SHADOWLINE" OR APPROVED EQUAL. UL. RATING AS REQ'D FOR WALL ASSEMBLY.

FIRE TRAK SLIM CLIP OR SIMILAR ATTACHMENT ALLOWING FOR VERTICAL MOVEMENT

NO FASTENERS IN STUD RETURN OR GYP. BD. 9" DOWN FROM TOP OF TRACK.

STOP GYP. BD. 5" FROM ROOF OR FLOOR JOIST/GIRDER

METAL STUDS W/ 4" TYPE "X" GYP. BD. EACH SIDE. STUD SIZE AND SPACING PER TABLE 9260-11 AND 9260-N

DETAIL 4
RATED WALL CLOSURE AT ROOF OR FLOOR JOIST/GIRDER NTS

09260-22
4" deep head track
No screw in return

R.F.C. on siding side
of wall, start @ 4'
Aff. to c and
Continue every 4' OC
to top D.W.C. detail

Siding:
Stop 3" from bottom
of roof deck siding
should have min. 1/2"
corrugation and
should be fastened
in every row rib
(white).

3" gap between top of stud
and top of head track

3" min. from top piece of
d.w.c. and bottom of top
track

All R.F.C. fastened w/ screws
at every stud top and
bottom.

Metal studs w/ R.F.C. w/ siding,
Stud size and spacing per
Table 9260-M and 9260-N

R.F.C. on framed only side
start @ 2' aff. to c & continue
every 4' to top R.F.C. detail

**DETAIL 5**
**METAL PANEL CLOSURE ON METAL STUDS**

09260-23
### 09260 - Table 1

**Interior Metal Stud Partitions (Office Buildings)**

<table>
<thead>
<tr>
<th>Wall Height (FT.)</th>
<th>Stud Size</th>
<th>Stud Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 to 9</td>
<td>2 1/2&quot;, 25 GA. (250S125-18)</td>
<td>24&quot; O.C.</td>
</tr>
<tr>
<td>9 to 10</td>
<td>2 1/2&quot;, 20 GA. (250S125-33)</td>
<td>24&quot; O.C.</td>
</tr>
<tr>
<td>10 to 15</td>
<td>2 1/2&quot;, 20 GA. (BRACED @ 10' AFF)</td>
<td>24&quot; O.C.</td>
</tr>
</tbody>
</table>

If wall has sheathing on one side only, provide bridging at 4'-0" on center, maximum. Hat channels may be used in lieu of bridging.

### Interior Metal Stud Partitions (Industrial Buildings)

<table>
<thead>
<tr>
<th>Wall Height (FT.)</th>
<th>Stud Size</th>
<th>Stud Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 to 9</td>
<td>2 1/2&quot;, 25 GA. (250S125-18)</td>
<td>24&quot; O.C.</td>
</tr>
<tr>
<td>9 to 10</td>
<td>2 1/2&quot;, 20 GA. (250S125-33)</td>
<td>24&quot; O.C.</td>
</tr>
<tr>
<td></td>
<td>3 5/8&quot;, 25 GA. (362S125-18)</td>
<td>24&quot; O.C.</td>
</tr>
<tr>
<td>10 to 15</td>
<td>2 1/2&quot;, 20 GA. (BRACED @ 10' AFF)</td>
<td>24&quot; O.C.</td>
</tr>
<tr>
<td></td>
<td>3 5/8&quot;, 20 GA. (362S125-33)</td>
<td>16&quot; O.C.</td>
</tr>
<tr>
<td>15 to 20</td>
<td>6&quot;, 20 GA. (600S125-33)</td>
<td>24&quot; O.C.</td>
</tr>
<tr>
<td>20 to 25</td>
<td>6&quot;, 18 GA. (600S125-43)</td>
<td>24&quot; O.C.</td>
</tr>
<tr>
<td>25 to 28</td>
<td>6&quot;, 16 GA. (600S125-54)</td>
<td>16&quot; O.C.</td>
</tr>
<tr>
<td>28 to 36</td>
<td>8&quot;, 16 GA. (800S125-54)</td>
<td>16&quot; O.C.</td>
</tr>
</tbody>
</table>

If wall has sheathing on one side only, provide bridging at 4'-0" on center, maximum. Hat channels may be used in lieu of bridging.

### 09260 - Table 2

**Minimum Stud Properties**

<table>
<thead>
<tr>
<th>Size</th>
<th>1x (in^4)</th>
<th>Resisting Moment (in-lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 1/2&quot; STN-25 GA.</td>
<td>0.093</td>
<td>1,451</td>
</tr>
<tr>
<td>2 1/2&quot; STE-20 GA.</td>
<td>0.183</td>
<td>2,662</td>
</tr>
<tr>
<td>2 1/2&quot; 250S125-30 GA.</td>
<td>0.161</td>
<td>2,060</td>
</tr>
<tr>
<td>3 5/8&quot; STN-25 GA.</td>
<td>0.227</td>
<td>2,432</td>
</tr>
<tr>
<td>3 5/8&quot; STE-20 GA.</td>
<td>0.407</td>
<td>4,928</td>
</tr>
<tr>
<td>6&quot; STE-20 GA.</td>
<td>1.381</td>
<td>10,099</td>
</tr>
<tr>
<td>6&quot; CSJ-20 GA.</td>
<td>1.808</td>
<td>11,516</td>
</tr>
<tr>
<td>6&quot; CSJ-16 GA.</td>
<td>2.862</td>
<td>21,175</td>
</tr>
<tr>
<td>8&quot; CSJ-16 GA.</td>
<td>5.74</td>
<td>31,847</td>
</tr>
</tbody>
</table>

Properties are based on Dietrich stud properties.
09260 - Table 3

**Metal Runner Connection at Floor**

<table>
<thead>
<tr>
<th>Wall Height</th>
<th>Type of Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial Height</td>
<td>Refer to Wall Type &quot;E&quot;</td>
</tr>
<tr>
<td>7'-0&quot; - 15'-0&quot;</td>
<td>Secure metal runner to floor with powder driven fasteners @ 2'-0&quot; O.C.</td>
</tr>
<tr>
<td>16'-0&quot; and above</td>
<td>Secure metal runner to floor with rawl drive fasteners @ 2'-0&quot; O.C.</td>
</tr>
</tbody>
</table>

END OF SECTION
SECTION 09300

CLAY TILE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Ceramic and quarry tile floor, base, and wall finish using thinset application method and grouted joints.
   2. Waterproof and Crack Isolation Membrane.
   3. Thresholds at door openings.

B. Related Work Not Covered by This Specification:
   1. Thin stone tile set with non grouted joints.
   2. Cast-in-Place Concrete floor substrate finishing.
   3. Unit Masonry wall substrate.

1.2 DESCRIPTIONS

A. Provide waterproof and crack isolation membrane at shower pans.

1.3 SUBMITTALS

A. Submit samples of finishes for selection of colors when not selected by Contractor.
   1. Submit two panels, illustrating pattern, color variations, and grout joint size variations.

1.4 QUALITY ASSURANCE

A. Standards:
   1. Provide tile in accordance with ANSI/TCA A137.1 specifications for Ceramic Tile.
   2. Install tile in accordance with the latest edition of TCA Handbook for Ceramic Tile Installation.

1.5 QUALIFICATIONS

A. Applicator: Company specializing in applying the work of this Section with minimum three years documented experience and approved by product manufacturer.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not install adhesives in a closed, unventilated environment.

B. Maintain 50°F during installation and curing of mortar materials.

1.7 EXTRA MATERIALS

A. Provide amount equal to 2 percent of installed area of each color, pattern, and type.
PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Tile: As indicated on drawings.

B. Membrane:
   1. NobleSeal TS manufactured by Noble Company.
   3. Other products meeting specification as approved by Contractor.

2.2 TILE MATERIALS

A. Ceramic Floor Tile: ANSI/TCA A137.1; size as indicated on drawings; cushioned edge; unglazed, non-slip surface finish; color as selected from range available.

B. Ceramic Mosaic Wall Tile: ANSI/TCA A137.1; size as indicated on drawings, scored and unscored; cushioned edge; glazed surface finish; color as selected from range available.

C. Quarry Floor Tile: ANSI/TCA A137.1; size as indicated on drawings; cushioned edge; unglazed, non-slip surface finish; color as selected from range available.

D. Base: Match floor tile for surface finish, color, and sizing; bullnosed and cushioned top edges; coved internal corner.

E. Wainscot Cap: Match wall tile for surface finish, and color; bullnosed cap; 4 size as indicated on drawings.

2.3 SETTING MATERIALS

A. Organic Adhesive: ANSI/TCA A136.1, Type 1, thinset bond type;

B. Epoxy Adhesive: ANSI/TCA A118.3, thinset bond type;

2.4 GROUT MATERIALS

A. Dry-Set or Latex-Portland Cement Grout - ANSI A118.6.

2.5 ACCESSORIES

A. Thresholds: Marble type, color as selected, honed finish, full depth and width of wall or frame opening, beveled both sides, radiused edges.

B. Floor Edging: Reducer strip, color and size compatible with tile and adjacent material; Series 170 by Mercer Plastic Company, Inc. or equal.
2.6 GROUT MIX

A. Mix and proportion setting bed and grout materials in accordance with manufacturer's instructions and ANSI/TCA A118.6.

2.7 MEMBRANES

A. Waterproof and Crack Isolation Membrane: Chlorinated polyethylene (CPE) laminated to high-strength non-woven polyester material on both sides; 0.030 inch nominal thickness.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify that surfaces are ready to receive Work.

B. Protect surrounding work from damage or disfiguration.

C. Vacuum clean existing substrate and damp clean.

D. Seal substrate surface cracks with filler.

3.2 MEMBRANE INSTALLATION

A. Adhere to substrate with latex-portland cement mortar for use with membrane and A108.1.

B. Solvent weld seams, seal penetrations, and make waterproof.

C. Connection to Floor Drains: Connect membranes to floor drains as specified for floor drains.

D. Testing: Test floors for leaks by plugging drains or damming areas and filling with water. Inspect, make necessary adjustments, and retest until watertight. Protect membrane from damage; provide temporary cover or leave water standing until tile is installed. Do not install tile until membrane has been tested and accepted.

3.3 INSTALLATION

A. Install adhesive, tile, threshold, wainscot cap, and grout in accordance with the following ANSI standards and setting material manufacturer's instructions.

   1. A108.5 - Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar.
   2. A108.4 - Installation of Ceramic Tile with Organic Adhesives or Water-Cleanable Tile Setting Epoxy Adhesive.

B. Lay tile and accessories to pattern indicated on shop drawings and approved by Construction Manager. Do not interrupt tile pattern through openings.
C. Limits of Tile: Extend tile into recesses and under equipment and fixtures to form a complete covering without interruptions.

D. Terminate tile neatly at obstructions, edges, and corners, without disruption of pattern or joint alignment. Cut and fit tile tight to penetrations. Form corners and bases neatly. Align floor, base, and wall joints.

E. Place thresholds and edge strips at scheduled locations.

F. Grout tile joints. Make joints watertight, without voids, cracks, excess mortar or excess grout.

G. Sound tile after setting. Replace hollow sounding units.

H. Keep expansion and control joints free of adhesive or grout.

3.4 PROTECTION

A. Do not permit traffic over finished floor surface for minimum 7 days after installation.

END OF SECTION
SECTION 09380
THIN STONE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Natural and agglomerated, marble and granite stone flooring.
   2. Epoxy thinset application method.
   3. Isolation Membrane.

B. Related Work Not Covered by This Specification:
   1. Tile set with grouted joints.
   2. Cast-in-Place Concrete floor substrate finishing.

1.2 SUBMITTALS

A. Submit samples of finishes for selection of colors when not selected by Construction Manager.
   1. Submit 12 x 12 inch sample illustrating color variations.

1.3 QUALITY ASSURANCE

A. Standards:
   1. Install tile in accordance with TCA Handbook for Ceramic Tile Installation.

1.4 QUALIFICATIONS

A. Applicator: Company specializing in applying the work of this Section with minimum three years documented experience and approved by product manufacturer.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Do not install adhesives in a closed, unventilated environment.

B. Maintain 50°F during installation and curing of mortar materials.

1.6 EXTRA MATERIALS

A. Provide amount equal to 2 percent of installed area of each color, pattern, and type.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Setting Materials:
   1. H. B. Fuller
   2. Upco.
   3. Laticrete International.
2.2 TILE MATERIALS
   A. As selected.

2.3 SETTING MATERIALS
   A. Epoxy Adhesive: ANSI/TCA A118.3, thinset bond type;

2.4 GROUT MATERIALS
   A. Epoxy Grout: Chemical resistant type; resistant to shrinking - ANSI A118.3;

2.5 GROUT MIX
   A. Mix and proportion setting bed and grout materials in accordance with manufacturer's instructions and ANSI/TCA A118.3.

2.6 MEMBRANES
   A. Waterproof and Crack Isolation Membrane: Chlorinated polyethylene (CPE) laminated to high-strength non-woven polyester material on both sides; 0.030 inch nominal thickness.

PART 3 - EXECUTION

3.1 PREPARATION
   A. Verify that surfaces are ready to receive work.
   B. Protect surrounding work from damage or disfiguration.
   C. Vacuum clean existing substrate and damp clean.
   D. Seal substrate surface cracks with filler.

3.2 MEMBRANE INSTALLATION
   A. Adhere to substrate with latex-portland cement mortar for use with membrane and A108.1.
   B. Solvent weld seams, seal penetrations, and make waterproof.
   C. Connection to Floor Drains: Connect membranes to floor drains per manufacturer's requirements.
   D. Testing: Test floors for leaks by plugging drains or damming areas and filling with water. Inspect, make necessary adjustments, and retest until watertight. Protect membrane from damage; provide temporary cover or leave water standing until tile is installed. Do not install tile until membrane has been tested and accepted.

3.3 INSTALLATION
A. Install tile and grout in accordance with the following ANSI standards and setting material manufacturer's instructions.
   1. ANSI/TCA A118.3 - Chemical Resistant, Water Cleanable, Tile-Setting and Grouting Epoxy.

B. Lay tile and accessories to pattern approved by Contractor. Do not interrupt tile pattern through openings.

C. Limits of Tile: Extend tile into recesses and under equipment and fixtures to form a complete covering without interruptions.

D. Terminate tile neatly at obstructions, edges, and corners, without disruption of pattern or joint alignment.

E. Place thresholds and edge strips at scheduled locations.

F. Cut and fit tile tight to penetrations. Form corners and bases neatly. Align floor, base, and wall joints.

G. Sound tile after setting. Replace hollow sounding units.

H. Keep expansion and control joints free of adhesive or grout.

3.4 PROTECTION

A. Do not permit traffic over finished floor surface for minimum 7 days after installation.

END OF SECTION
SECTION 09510
SUSPENDED CEILING SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. Non-fire rated mineral fiber panel and suspended metal grid system.
   2. Perimeter and bulkhead trim.

B. Related Work Not in This Specification:
   1. Rated Ceiling Systems.
   2. Fiberglass Panels.
   3. Ceiling Tile.
   4. Glass fiber reinforced plastic panels.
   5. Sprinkler heads in ceiling system.
   6. Air diffusers in ceiling system.
   7. Light fixtures in ceiling system.

1.2 SYSTEM DESCRIPTION

A. Install system capable of supporting imposed loads to a deflection of 1/360 maximum.

1.3 SUBMITTALS

A. Submit samples of for selection of types when not selected by Contractor.
   1. Submit two samples of each type of tile, 12 x 12 inch size.

1.4 QUALITY ASSURANCE

A. Perform installation in accordance with CISCA and ASTM C636.
   1. CISCA - Ceiling and Interior Systems Contracting Association.
   2. UL - Underwriter's Laboratories System Ratings.

B. Maintain one copy of each document at site.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacture of materials specified in this Section with three years minimum experience.

B. Installer: Company specializing in installing the work of this Section with three years documented experience, approved by the manufacturer.

1.6 REGULATORY REQUIREMENTS

A. Conform to applicable building code for fire rated assembly and material combustibility.
1.7 ENVIRONMENTAL REQUIREMENTS

A. Maintain uniform temperatures of minimum 61°F and humidity of 20% to 40% prior to, during, and after installation.

1.8 SEQUENCING AND SCHEDULING

A. Do not install acoustical ceilings until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Schedule installation of acoustic units after interior wet work is dry.

1.9 EXTRA MATERIALS

A. Provide amount equal to 2 percent of installed area, or next full carton, of each pattern and type.

B. Clearly identify each box and store as directed.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Fiberboard Panels: (2’x2’ or 2’x4’)
   1. USG Interiors Inc.
   4. Manufacturer meeting specifications and approved by the Contractor.

2.2 SUSPENSION SYSTEM

A. Grids: ASTM C 635, exposed T; components die cut and interlocking;
   1. Exposed Width - 15/16"
   2. Intermediate duty.

B. Accessories: Stabilizer bars, clips, splices, hold down clips, and edge moldings.

C. Support Channels and Hangers: Galvanized steel, size and type to suit application.

2.3 LAY-IN PANELS

A. Mineral fiber composition, non-directional fissured surface pattern, size as indicated or for existing installations, panels matching size, type, brand, acoustical rating, weight, color, density and surface pattern of existing panels to be matched.
PART 3 - EXECUTION

3.1 PREPARATION

A. Prior to installing verify that layout of hangers will not interfere with other work.

3.2 INSTALLATION

A. Suspension System: Install in accordance with CISCA and ASTM C636 to produce finished ceiling true to lines and levels and free from warped, soiled, or damaged grid or lay-in panels.
1. Coordinate the location of hangers with other work. Where components prevent the regular spacing of hangers, reinforce the system to span the extra distance.
2. Hang system independent of walls, columns, ducts, pipes, and conduit.
3. Center system on room axis leaving equal border units.
4. Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths. Miter corners. Provide edge molding at junction with other ceiling finishes. At bullnose concrete masonry corners, provide preformed closers to match edge molding.
5. Account for seismic requirements if required by local codes.

B. Lay-in Panels
1. Install lay-in panels level, in uniform plane and free from twist, warp, and dents.
2. Lay directional patterned units one way with pattern parallel to longest room axis or as directed by Construction Manager. Fit border units neatly against abutting surfaces.
3. Lay acoustic insulation above lay-in units for a distance of 48 inches either side of acoustic partitions, except in Processing or Packaging areas.
4. Install hold-down clips where indicated on drawings to retain panels tight to grid system.
5. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support component loads by supplementary hangers located within 6 inches of each corner, or support components independently.
6. Do not eccentrically load system, or produce rotation of runners.
7. Form expansion joints where required. Accommodate plus or minus one inch movement and maintain visual closure.

3.3 TOLERANCES

A. Variation from Flat and Level Surface: 1/8 inch in 10 feet.

END OF SECTION
SECTION 09661
VINYL COMPOSITION TILE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Vinyl tile resilient flooring and edge strips.
   2. Adhesives, primers, and transition materials as shown or required.

B. Related Work Not Covered by This Specification:
   1. Resilient Base.
   2. Sheet Vinyl Flooring.

1.2 SUBMITTALS

A. Submit samples of tile for selection of colors when not selected by Contractor.

1.3 QUALITY ASSURANCE

A. Provide resilient floor materials, primers, adhesives and accessories produced by a single manufacturer.

B. Conform to recommended trade practices to prevent cracks and loss of bond.

1.4 DELIVERY STORAGE AND JOB CONDITIONS

A. Deliver materials in manufacturer’s original unopened containers, clearly marked to indicated pattern, gauge, lot number and sequence of manufacture.

B. Store materials in original containers at 70°F for at least 48 hours before start of installation. Maintain 70°F temperature continuously during and after installation as recommended by tile manufacturer, but not less than 48 hours. Maintain temperature of 55°F in completed areas.

PART 2 - PRODUCTS

2.1 VINYL COMPOSITION TILE

A. FS-SS-T-312, Type IV Composition 1 (asbestos free).

B. Size: 12" x 12" x 1/8".

C. Color: Selected by Contractor from manufacturer’s full color range.

2.2 RESILIENT EDGE STRIPS

A. Provide rubber reducer strips in thickness to match at all exposed edges of tile.
2.3 PRIMER AND ADHESIVES

A. As manufactured or recommended by resilient materials manufacturer for the intended use.

PART 3 - EXECUTION

3.1 PREPARATION AND INSPECTION

A. Remove materials detrimental to bonding of underlayment or tile adhesive. Clean, vacuum and inspect substrates. Start of tile laying constitutes acceptance of substrate conditions.

B. Use leveling compound recommended by tile manufacturer to fill small cracks and depressions, and flush transitions to adjacent floor finishes.

C. Apply concrete slab primer if recommended by tile manufacturer, prior to application of the adhesive. Apply in compliance with manufacturer's directions.

3.2 INSTALLATION

A. Install tile after all painting and finishing operations are completed.

B. Place and adhere tile in accordance with manufacturer's recommendation. Butt tile tightly to intersecting surfaces. Scribe and cut tile around obstructions to produce neat tight joints, even and in straight, parallel lines. Extend tile into toe spaces, door reveals, and similar areas. Cement tile to sub-base without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks through tile, or other surface imperfections.

C. Match tiles for color and pattern by using tile in the same sequence as manufactured and packaged. Do not use broken, cracked, chipped or deformed tile.

D. Lay tile from center marks established with principal walls, discounting minor off-sets, so that tile at opposite edges of the room are of equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Make very effort not to use less than 1/3 of standard 12" x 12" tile. Lay tile square to room axis.

E. Limits of Tile: Lay tile full extent of rooms, including areas below built in cabinetry. If cabinets are installed prior to flooring, resilient tile may be deleted in fully enclosed areas.

F. Place resilient edge strips tightly butted to tile and secure with adhesive.

G. Neatly make cutouts for recessed electric boxes.

H. Leave at job site all usable pieces of full tile. Place in areas as designated by the Contractor.

3.3 CLEANING AND PROTECTION
A. Immediately after installation, sweep and vacuum floor thoroughly. Damp mop to remove marks and soil after allowed time period recommended by tile manufacturer. Remove any excess adhesive or other surface blemishes from tile, using neutral type cleaners as recommended by tile manufacturer.

B. Immediately prior to final acceptance re-clean, wax, and polish floor.

END OF SECTION
SECTION 09665
SHEET VINYL FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Filled vinyl sheet resilient flooring.
   2. Integral coved base.

B. Related Work Not Covered by this Specification:
   1. Vinyl tile.
   2. Rubber sheet flooring.

1.2 SUBMITTALS

A. Submit samples of sheet vinyl for selection of colors when not selected by Contractor.

1.3 JOB CONDITIONS

A. Deliver materials to site in manufacturer's unopened containers, clearly to indicate pattern, gauge, lot number and sequence of manufacture. Carefully handle all materials. Store in original containers at not less than 70°F. at least 48 hours before start of installation.

B. Maintain minimum 70°F. temperature during and after installation as recommended by manufacturer, but not less than 48 hours. Maintain temperature at least 55°F. where work is completed.

PART 2 - PRODUCTS

2.1 ACCEPTABLE PRODUCTS

A. Basis of Design: As indicated on the drawings.

2.2 MATERIAL

A. Filled Vinyl Sheet without Backing: Provide non-layered filled vinyl sheet with pattern and color extending through its full thickness and complying with the following requirements:
   1. Federal Standard: Comply with FS L-F-475, Type II, Grade A requirements except for overall thickness, backing and dimensional stability requirements.
   2. Static Load Limit: 125 psi minimum as recommended by manufacturer.

B. Non-layered filled vinyl sheet with pattern and color extending through full thickness.
   1. Federal Standard: Comply with FS L-F-475, Type II, Grade A except for overall thickness, backing and dimensional stability.
   2. Static Load Limit: 125 psi minimum.
   3. Thickness: 0.085" nominal.
C. Sheet Width: 4'-0" minimum.
D. Color: As selected from manufacturer's full range of colors.

2.3 ACCESSORY MATERIAL

A. Provide accessory materials recommended by flooring manufacturer for material and substrates.
   1. Adhesives (Cements): Waterproof, stabilized type.
   2. Concrete Slab Primer: Non-staining type.

PART 3 - EXECUTION

3.1 PREPARATION

A. Remove adhesives, coating or other foreign materials detrimental to bonding of Sheet Flooring. Prior to start of installation, broom clean and vacuum all surfaces to be covered and inspect substrates. Start of laying file will indicate acceptance of substrate conditions and full responsibility for the completed work.

B. Use leveling compound to fill cracks and depressions in substrates. Use underlayment for flush transitions to adjacent floor finishes.

C. Apply concrete slab primer if recommended by sheet manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

3.2 INSTALLATION

A. Install Flooring in accordance with manufacturer's specifications. Extend flooring into toe spaces, door reveals, closets and similar openings.

B. Place Sheet Flooring with adhesive cement and heat weld seams. Butt tightly to vertical surfaces, thresholds, and edging. Scribe around obstructions to produce neat joints, tight, even and straight.

C. Maintain reference makers, holes and openings that are in place or plainly marked for future cutting by repeating on the finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.

D. Lay sheet flooring in substrate without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Lay sheet flooring with minimum number of seams. Match edges for color shading and pattern at seams in compliance with manufacturer's recommendations, such as reversing adjoining sheets of the same roll, so that abutting edges are from the same edge of the roll.

E. Place resilient edge strips tightly butted to sheet flooring and secure with adhesive. Install edging strips at unprotected edges of sheet flooring.

F. Provide integral flash cove base where shown on drawings, including cove support strip and metal top edge strip. Construct coved base in accordance with manufacturer's instructions.

09665-2
1. On masonry surfaces or other similar irregular vertical substrates, fill voids between metal top edge strip cove cap and vertical surface with manufacturer's recommended adhesive filler material.

3.3 CLEANING AND PROTECTION

A. Immediately after installation, sweep and vacuum floor thoroughly. Damp mop to remove marks and soil after allowed time period recommended by tile manufacturer. Remove any excess adhesive or other surface blemishes from tile, using neutral type cleaners as recommended by tile manufacturer.

B. Immediately prior to final acceptance re-clean, wax, and polish floor.

END OF SECTION
SECTION 09678
RESILIENT BASE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Top set cove bases for resilient tile and carpet.
   2. Flooring Edge Strips.

B. Related Work Not Covered by this Specification:
   1. Vinyl Composition Tile.
   2. Rubber Stair Treads.

1.2 SUBMITTALS

A. Submit samples of base for selection of colors when not selected by Contractor.

1.3 DESCRIPTIONS

A. Materials: Provide rubber or vinyl base consistent with the drawing requirements.

B. Base Types:
   1. In areas having hard surface floors: Cove type.
   2. In areas having carpet: Cove type.

C. Height:
   1. At Carpet – 2 ½" or 4 inches as indicated on drawings.
   2. At Resilient Tile - 4 inches (or in restrooms, as required, per local codes).

D. Provide bases on fixed cabinetry.

1.4 QUALITY ASSURANCE

A. Provide resilient floor materials, primers, adhesives and accessories produced by a single manufacturer.

1.5 DELIVERY STORAGE AND JOB CONDITIONS

A. Deliver materials in manufacturer's original unopened containers, clearly marked to indicated pattern, gauge, lot number and sequence of manufacture.

B. Store materials in original containers at 70°F for at least 48 hours before start of installation.

1.6 PROJECT CONDITIONS

A. Maintain 65°F to 90°F temperature range continuously during and 48 hours before and after installation. Maintain temperature of 55°F in completed areas.
PART 2 - PRODUCTS

2.1 MATERIAL

A. Vinyl: FF-SS-W-40, Type II, with matching end stops and corner units.
   1. Thickness: .080 inch.

B. Rubber: FF-SS-W-40, Type I, with matching end stops and corner units.
   1. Thickness: 1/8 inch.

C. Provide color as selected by Architect from manufacturer's standard.

2.2 ACCESSORIES

A. Primer & Adhesives: As manufactured or recommended by base manufacturer for intended use.
   1. Adhesive - Waterproof stabilized type.
   2. Primer - Non staining.

B. Edge Strips: Reducer strips in thickness to match at all exposed edges of flooring.

2.3 PREFORMED CORNERS

A. For colored base use scribed and formed pieces with joints not less than 24 inches from corners. Bevel terminal ends and round coves.

B. For black base provide cast preformed units.

PART 3 - EXECUTION

3.1 PREPARATION AND INSPECTION

A. Remove materials detrimental to bonding of adhesive.

3.2 RESILIENT BASE

A. Place units with adhesive cement in strict compliance with manufacturer's recommendation. Butt units tightly to intersecting surfaces. Scribe around obstructions. Produce neat joints, tight, even and straight.

B. Install in as long lengths as practicable. Tightly bond to backing throughout the length of each piece, with continuous contact.

C. At masonry walls fill voids along top edge of base with adhesive filler.

3.3 CLEANING AND PROTECTION

A. Remove any excess adhesive or other surface blemishes from base using neutral type cleaners as recommended by flooring manufacturer.

END OF SECTION
SECTION 09685
SHEET CARPET

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   2. Glued-down carpet installation.
   3. Moldings, adhesives cements for complete installation.

B. Related Work Not Covered by This Specification:
   1. Carpet Tile.
   2. Wall carpeting.
   3. Acoustical Wall coverings.
   4. Fabric Wall covering.
   5. Wall Base.

1.2 DESCRIPTION

A. Provide carpeting as selected by the Contractor’s authorized representative.

1.3 SUBMITTALS

A. Submit samples of carpet for selection of color and patterns when not selected by Contractor.
   1. Submit 4” x 4” sample with specifications attached.

1.4 QUALITY ASSURANCE

A. Use experienced installers which have successfully installed carpet in similar service applications for three years.


C. Flame/Smoke Resistance Standards: Provide materials meeting the following test rating standards as required Building Code Requirements.
   1. Pill Test: ASTM D 2859, or DOC FF-1-70.
   2. Floor Radiant Panel Test: ASTM E 648, with minimum average radiant flux ratings not less than 0.22 watts/sq. cm.
   3. Smoke Density Test: ASTM E 662 or NFPA No. 258 rating within limit required by governing regulation.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver carpeting materials in original mill protective wrapping. Store inside, in well ventilated area, protected from weather, moisture and soiling.
1.6 PROJECT CONDITIONS

A. Maintain 70°F during and 24 hours before and after installation. Maintain temperature of 55°F and a relative humidity range of 35% to 50% in completed areas.

1.7 SEQUENCING & SCHEDULING

A. Sequence carpeting with other work so as to minimize possibility of damage and soiling of carpet during remainder of construction period.

B. Install carpet after painting and other finishing operations are complete. Allow slabs on grade a minimum of 90 days cure prior to installation of carpet.

1.8 WARRANTY

A. Provide special project warranty, signed by Contractor and Manufacturer (Carpet Mill), agreeing to repair or replace defective materials and workmanship of Carpeting Work during 2-year warranty period following substantial completion.

B. Provide manufacturer's standard (5) year warranty on carpet material.

1.9 MAINTENANCE MATERIALS

A. Deliver usable scraps of carpet to Contractor's designated storage space, properly packaged (paper wrapped) and identified. Usable scraps are roll ends less than 9'-0" length, and pieces of more than 3 sq. ft. area and more than 8" wide. Dispose of smaller pieces.

PART 2 - PRODUCTS

2.1 CARPET

A. As Scheduled on Drawings or selected by the Contractor.

2.2 CARPET ACCESSORIES

A. Carpet Moldings:
   1. Resilient: Extruded or molded heavy-duty vinyl or rubber minimum 2" wide anchorage flange.
   2. Colors selected by Contractor from manufacturer’s standard colors.

B. Adhesive:
   1. Water resistant, non-staining type as meeting flammability requirements for installed carpet.
   2. Acceptable Products:
      a. #356 by W.W. Henry Company.
      b. Goldstix Premium by XL Corporation.
      c. Safeset 355 and Safeset 375 by Chapco.
      d. Other products meeting specifications and approved by Contractor.

C. Seaming Cement:
1. Non-Solvent based, (or Solvent based if required and more suitable to specific project conditions).

2. Acceptable Products:
   a. #246 by W.W. Henry Company.
   b. Lifespan 6900 or XTAC 500 by XL Corporation.
   c. #30 Seam Bond and #31 Seam Bond by Chapco.
   d. Other products meeting specifications and approved by Contractor.

D. Underlayment: Selected by Installer to meet project circumstances and requirements and acceptable to manufacturer of carpet and carpeting adhesive.

PART 3 - EXECUTION

3.1 INSPECTION & PREPARATION

A. Inspect substrates for detrimental conditions. Notify Contractor of conditions detrimental to the work. Beginning work means acceptance of substrate.

B. Repair holes, cracks, depressions and rough areas using material recommended by carpet and adhesive manufacturer. Use underlayment to even substrates. Remove dirt and contaminants and prepare floors as recommended by carpet manufacturer leaving floor clean and dry.

3.2 INSTALLATION

A. Comply with manufacturer's instructions and recommendations for seam locations and carpet direction. Maintain uniformity of carpet direction and lay of pile. At doors, center seams under doors. Do not place seams in traffic direction at doorways. Comply with carpet manufacturer’s installation handbook and consult manufacturer's installation information. Follow the "Standards for Installation of Commercial Carpet" published by the Carpet and Rug Institute for installation procedures.

B. Extend carpet under open-bottomed obstructions and under removable flanges and furnishings, and into alcoves and offsets of each space.
   1. Provide cutouts where required. Install edge guards where edge of carpet is exposed. Bind cut edges not protected by edge guards or overlapping flanges.

3.3 GLUE-DOWN INSTALLATION

A. Test substrate to demonstrate effectiveness of adhesive. Remove sample demonstrating procedure to minimize damage to carpet. Apply primer to entire substrate as necessary for adequate bond of carpet.

B. Fit carpet prior to application of adhesive. Trim off mill edges if carpet is not pre-trimmed. Maintain straight seams, true with lines of building.

C. Securing base of pile at cut edges with seaming cement without evidence on carpet face.

D. Apply adhesive uniformly to substrate in accordance with manufacturer's instructions. Butt carpet edges tightly together to form seams without gaps. Roll lightly to eliminate
air pockets and ensure uniform total-area bond of carpet to substrate. Remove adhesive (if any appears) promptly from face of installed carpet.

3.4 CLEANING AND PROTECTION

A. Remove and dispose of debris and unusable scraps.

B. Vacuum carpet using commercial machine with face-beater element. Remove spots and replace carpet where spots cannot be removed. Remove protruding face yarn.

END OF SECTION
SECTION 09690

CARPET TILE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Carpet Tile.
   3. Provide underlayment to repair slabs where required.

B. Related Work Not Covered by this Specification:
   1. Sheet carpet.
   2. Cement and gypsum underlayment.

1.2 SUBMITTALS

A. Submit samples of carpet for selection of color and patterns when not selected by Contractor.
   1. Submit 4” x 4” sample with specifications attached.

1.3 QUALITY ASSURANCE

A. Use experienced installers which have successfully installed carpet in similar service applications for three years.


C. Flame/Smoke Resistance Standards: Provide materials meeting the following test rating standards as required Building Code Requirements.
   1. Pill Test: ASTM D 2859, or DOC FF-1-70.
   2. Floor Radiant Panel Test: ASTM E 648, with minimum average radiant flux ratings not less than 0.22 watts/sq. cm.
   3. Smoke Density Test: ASTM E 662 or NFPA No. 258 rating within limit required by governing regulation.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver carpet materials in original mill protective wrapping. Store inside, in well ventilated area, protected from weather, moisture and soiling.

1.5 PROJECT CONDITIONS

A. Maintain 70°F. during and 24 hours before and after installation. Maintain temperature of 55°F and a relative humidity range of 35% to 50% in completed areas.
1.6 SEQUENCING & SCHEDULING

A. Sequence carpeting with other work so as to minimize possibility of damage and soiling of carpet during remainder of construction period.

B. Install carpet after painting and other finishing operations are complete. Allow slabs on grade a minimum of 90 days cure prior to installation of tile.

1.7 WARRANTY

A. Provide special project warranty, signed by Contractor and Manufacturer (Carpet Mill), agreeing to repair or replace defective materials and workmanship of Carpeting Work during 2-year warranty period following substantial completion.

B. Provide manufacturer's standard (5) year warranty on carpet material.

PART 2 - PRODUCTS

2.1 CARPET TILE

A. Provide Carpet Tile as scheduled.

2.2 CARPET ACCESSORIES

A. Carpet Moldings:
   1. Resilient: Extruded or molded heavy-duty vinyl or rubber minimum 2" wide anchorage flange. Colors selected by Contractor from manufacturer’s standard colors.
   2. Metal: Brass strips specifically designed for carpet.

B. Adhesive:
   1. Water resistant, non-staining type meeting flammability requirements for installed carpet.
   2. Acceptable Products:
      a. #356 by W.W. Henry Company.
      b. Goldstix Premium by XL Corporation.
      c. Safeset 355 and Safeset 375 by Chapco.
      d. Other products meeting specifications and approved by Contractor.

C. Underlayment: Selected by installer for project requirements and acceptable to manufacturer of carpet and adhesive.

PART 3 - EXECUTION

3.1 INSPECTION & PREPARATION

A. Inspect substrates for detrimental conditions. Notify Contractor of conditions detrimental to the work. Beginning work means acceptance of substrate.

B. Repair minor holes, cracks, depressions and rough areas using material recommended by carpet and adhesive manufacturer. Even substrates with underlayment. Remove
contaminants and dirt. Prepare floor as recommended by carpet manufacturer. Leave floor clean and dry.

3.2 INSTALLATION

A. Comply with manufacturer’s instructions and recommendations for joint locations and carpet direction. Maintain uniformity of carpet direction and lay of pile. Center joints at door openings.

B. Extend carpet under open-bottomed obstructions and under removable flanges and furnishings, and into alcoves and offsets of each space.

C. Provide cutouts where required. Install edge guards where edge of carpet is exposed.

3.3 GLUE-DOWN INSTALLATION

A. Test substrate to demonstrate effectiveness of adhesive. Remove sample demonstrating procedure to minimize damage to carpet. Apply primer to entire substrate as necessary for adequate bond of carpet.

B. Layout carpet tile prior to adhering. Maintain straight joints, true with lines of building.

C. Securing base of pile at cut edges with seaming cement without evidence on carpet face.

D. Apply adhesive to substrate in accordance with manufacturer’s instructions. Butt carpet edges tightly together to form joints without gaps. Roll lightly to eliminate air pockets and ensure uniform total-area bond of carpet to substrate. Remove adhesive (if any appears) promptly from face of installed carpet.

3.4 CLEANING AND PROTECTION

A. Remove and dispose of debris and unusable scraps.

B. Vacuum carpet using commercial machine with face-beater element. Remove spots and replace carpet where spots cannot be removed. Remove protruding face yarn.

END OF SECTION
SECTION 09900

PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Except for items specifically excluded in (B) below, field paint all new
      construction provided under this specification.
   2. Surface preparation, priming and coats of paint specified are in addition to shop
      priming and surface treatments specified under other Specification Sections.
   3. Where items or surfaces that are normally painted (such as piping and conduit in
      painted areas) are not specifically mentioned, paint same as adjacent similar
      material or areas.

B. Work Not to be Field Painted:
   1. Prefinished items.
   2. Walls or ceilings in concealed areas and generally inaccessible areas, furred
      areas, pipe spaces, and duct shafts.
   4. Operating parts and labels.
   5. Do not paint over any code-required labels, or any equipment identification,
      performance rating, name, or nomenclature plates.
   6. Transparent factory finishes.
   7. Floors.
   8. Glazing.
   10. Casework and Equipment.

C. Specified in Other Sections:
   1. Shop priming of ferrous metal; structural steel, miscellaneous metals and hollow
      metal.

1.2 DEFINITIONS

A. "Paint": Opaque and transparent coating materials, including primers, emulsions,
   enamels, and fillers, and other applied materials whether used as prime, intermediate,
   or finish coats.

1.3 QUALITY ASSURANCE

A. Use paints that are compatible with shop primed surfaces and existing painted
   surfaces.

1.4 COLOR SCHEDULE

A. Provide colors in accordance with accepted color schedule. Regardless of material
   source or base material, final finish must match exactly the finish samples provided.
1.5 DELIVERY AND STORAGE

A. Store materials and equipment in well ventilated storage area. Keep storage area clean and accessible at all times.

B. Deliver materials to job site in original, new and unopened containers bearing manufacturer's name and label and following information:
   1. Name or title of material.
   2. Fed. Spec. number, if applicable.
   3. Manufacturer's stock number and date of manufacture.
   4. Manufacturer's name.
   5. Content by volume, for major pigment and vehicle constituents.
   6. Thinning instruction.
   7. Application instructions.
   8. Color name and number.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Basis of Specification: Sherwin Williams as scheduled herein.

B. Equivalent products by one of the following manufacturers are also acceptable.
   1. MAB
   2. Porter Paint
   3. Perry & Derrick
   4. Glidden Coatings
   5. ICI
   6. Manufacturer as approved by the Contractor.

2.2 MATERIALS

A. Provide pure linseed oil, turpentine, shellac, and other like materials of the highest quality, with identifying labels intact and seals unbroken. Use thinners specified by the paint manufacturer.

B. Use primers, sealers, stains, and undercoatings suitable for each surface to be covered and compatible with finish coat required.

2.3 MATERIALS AND PROCEDURES

A. Provide paint and coatings of type and number of coats for substrates indicated.

B. Touch-up of Ferrous Metal: For factory primed or galvanized ferrous metal where no further field painting is indicated or that is not specified to be touched-up in the specification section under which it is furnished, touch up with rust-inhibitive metal primer. Use galvanizing repair paint on galvanized surfaces.
C. Interior Painting

1. Ferrous Metal:
   a. Unprimed: One coat Kem Kromik primer
      Two coats Pro-Mar 200 semi glass oil B34 series
   b. Primed: One coat spot prime with Kem Kromik primer
      Two coats P/M 200 B34 series
   c. Galvanized: One coat wash primer B60G2
      Two coats P/M 200 B34 series
   d. Exposed construction: One coat dryfog flat B48W61
      ceilings, including deck, piping, etc.:
      (Note: All galvanized duct and galvanized deck
      (if any) must be primed with P60G2 wash primer.)

2. Concrete Masonry: One coat B25 W25 filler
   Two coats P/M 200 latex eggshell B20 series

3. Drywall:
   a. Flat: Two coats P/M 200 flat B30 series
   b. Eggshell: One coat P/M 200 PVA B28W200 series
      Two coats P/M 200 latex eggshell B20 series

4. Wood (opaque): One coat enamel undercoat B49W200
   Two coats P/M 200 eggshell oil B33 series

5. Wood (transparent): One coat Sherwood wiping stain A48 series
   One coat sanding sealer A26V3
   Two coats satin varnish A66 series

6. Aluminum: One coat Zinc Chromate B6041
   Two coats P/M 200 semi gloss oil B34 series

D. Exterior Painting:

1. Ferrous Metal:
   a. Unprimed: One coat Kem Kromik primer
      Two coats industrial enamel B54 series
   b. Primed: One coat spot prime with Kim Kromik primer
      Two coats industrial enamel B54 series
   c. Galvanized: One coat DTM primer B66W1
      One coat DTM finish B66 series

2. Concrete Masonry: One coat B25 W25 filler
   Two coats A100 A6 series

3. Wood: One coat 424W20 Alkyd wood primer
   Two coats A100 A8 or A82 series

4. Tilt-up Concrete: Power wash (as necessary)
   One coat masonry conditioner
   One coat A100 flat A6 series
   (Note: Apply one or two coats for complete coverage, including accent stripes)

PART 3 - EXECUTION

3.1 PREPARATION
A. Examine areas and conditions under which painting work is to be applied. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

B. Place paint or solvent soaked rags, waste, or other materials which might constitute a fire hazard in metal containers and remove from premises at close of each day's work. Take very precaution to avoid fire.

C. Protect the work of trades against damage, marking or injury by suitable covering during the progress of painting and finishing work. Repair any damage done.

D. Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.

E. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space of area, reinstall removed items.

F. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Schedule cleaning and painting so contaminants from cleaning process will not fall onto newly painted surfaces.

G. Patch imperfections in existing substrates to be repainted.

3.2 SURFACE PREPARATION

A. Metals: Wire brush and clean rusted areas and touch up with primer. Solvent clean in accordance with SSPC-SP1.
   1. Treat bare and sandblasted or pickled clean metal with a metal pretreatment wash coat before priming.
   2. Pretreat aluminum and galvanized surfaces.

B. Cementitious Materials: Determine alkalinity and moisture content off surfaces to be painted by performing appropriate tests. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct this condition before application of paint. Do not paint over surfaces where moisture content exceeds manufacturer's printed recommendations.

C. Concrete Masonry Units:
   1. Prepare surfaces by removing all efflorescence, dirt, rust, oil, and grease stains and coatings detrimental to paint bond; method used shall be determined by Painting Contractor and paint manufacturer's representative; results must be satisfactory to the Architect.
   2. Before first paint coat is applied, spot prime any exposed metal occurring in the surfaces with an oil-base masonry primer as recommended by paint manufacturer, to insure against rust.
   3. Existing Concrete Masonry: Remove loose mortar and paint. Patch cracks and holes.
D. Wood: Clean wood surfaces to be painted of dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand paper smooth those finished surfaces exposed to view, and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer, before application of priming coat. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler.
   1. Prime, stain, or seal wood required to be job painted immediately upon delivery to job. Prime edges, ends, faces, undersides, and backsides of such wood, including cabinets, counters, cases, paneling.
   2. When transparent finish is required, use spar varnish for backpriming.
   3. Seal tops, bottoms, and cut-outs of unprimed wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.

E. Other Substrates: Conform to coating manufacturer's instructions.

F. The following is applicable to all substrates:
   1. Thoroughly remove materials detrimental to coating bond such as oil, grease, dirt, releasing agents, protective coatings and similar materials.
   2. Surfaces shall be dry and material to be painted shall be within the moisture content range permitted by the coatings manufacturer.
   3. Both the temperature of the substrate and the ambient temperature and humidity shall be within the range permitted by the coatings manufacturer.

3.3 MATERIALS PREPARATION

A. Mix and prepare painting materials in accordance with manufacturer's directions.

B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.

C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using. Continuously agitate zinc-rich primers.

3.4 APPLICATION

A. Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.
   1. Apply additional coats when undercoats, stains, or other conditions show through final coat of paint, until paint film is of uniform finish, color and appearance. Give special attention to insure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
   2. Finish doors on tops, bottoms and side edges.

B. Scheduling Painting:
   1. Apply first coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
   2. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel...
sticky under moderate thumb pressure, and application of another coat of paint does not cause lifting or loss of adhesion of undercoat.

C. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.

D. Prime Coats:
1. Apply prime coat of material which is required to be painted or finished, and which has not been prime coated by others.
2. Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure finish coat with no burn-through or other defects due to insufficient sealing.

E. Pigmented (Opaque) Finishes: Complete cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be accepted.

F. (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections.

G. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance.

3.5 CLEAN-UP AND PROTECTION

A. Clean-up:
1. During progress of work, remove from site discarded paint materials, rubbish, cans and rags at end of each work day.
2. Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

B. Protection:
1. Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting.
2. Provide "Wet Paint" signs as required to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.
3. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

END OF SECTION
SECTION 09950
WALL COVERINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Vinyl wallcovering.
   2. Textile wallcovering.

B. Related Work Not Covered by this Specification:
   1. Wall carpeting.
   2. Acoustical wall coverings.
   3. Wallpaper.

1.2 DESCRIPTION

A. Provide wall coverings as selected by Contractor’s authorized representative. For the purpose of proposal provide wall coverings in accordance with the following Schedule.

B. Schedule:
   1. Public areas: Type II vinyl wallcovering; minimum total weight of 19.5 oz. per lineal yard.
   2. Private areas: Type I vinyl wallcovering; minimum total weight of 15 oz. per lineal yard.

1.3 SUBMITTALS

A. Submit samples of wall covering for selection of color and patterns when not selected by Contractor.
   1. Submit 12” x 12” sample of each type of fabric required.

1.4 QUALITY ASSURANCE

A. Tests: Material to be tested in accordance with FS CCC-T-191, except for fire tests.

B. Installer to have three years experience in installing similar wall covering.

1.5 JOB CONDITIONS

A. Maintain a constant minimum temperature of 70°F. and maximum temperature of 90°F. in areas of installation for at least 72 hours before, and 48 hours after application of materials.

B. Install only when humidity conditions approximate building design humidity. Do not install until designed lighting system is fully operational.
1.6 DELIVERY STORAGE & HANDLING

A. Deliver materials in original packages or containers clearly labeled to identify manufacturer, brand name, quality or grade, and fire hazard classification.

B. Store materials in original packages. Do not store rolled goods in upright position. Maintain temperature in storage area above 40°F.

1.7 WARRANTY

A. Furnish manufacturers written 5-year warranty guaranteeing materials against staining from mildew or backing, and material defects causing loss of adhesion.

1.8 MAINTENANCE MATERIAL

A. After completion of work, deliver to Owner replacement materials equal to one percent of material installed for each type of material specified.

PART 2 - PRODUCTS

2.1 ACCEPTABLE PRODUCTS

A. As scheduled on the drawings.

2.2 MATERIALS

A. Vinyl Wallcovering: All wallcovering must meet the following requirements:
   1. Class A (ASTM E-84 tunnel test).
   2. Federal Specifications CCCW 408A and CFFA W101 A,B & C.

B. Textile Wallcovering: Provide textile wall fabric affixed to a suitable backing, and complying with the requirements of ASTM F 793, Category III, Decorative with Medium Serviceability. Provide material which has been treated for stain and mildew resistance.

C. Adhesive & Primers: Manufacturer’s recommended adhesive, primer and sealer, manufactured expressly for use with the selected wall covering. Provide materials which are mildew-resistant and non-staining to the wall covering.
   1. All wallcovering adhesive shall contain mildew inhibitors.
   2. Use strippable adhesive with all Type I and II vinyl wallcoverings over unprimed drywall. In some cases with light colors, the drywall joints may telegraph through vinyl wallcovering. Notify Contractor before proceeding. Provide PVA prime coat in these areas.
   3. Textile Wallcovering will require a PVA primer, use strippable adhesive after priming.

PART 3 - EXECUTION

3.1 PREPARATION
A. Remove wall covering material from its packaging and allow to acclimatize to installation area.

B. Fill minor surface defects with underlayment to make substrate true and uniform. Clean of dirt, oil, grease and foreign material. Prime and seal substrates in accordance with wall covering manufacturer's recommendations for substrate to be covered.

3.2 INSTALLATION

A. Comply with wall covering manufacturer's specifications. Install rolls in manufacturer's consecutive numerical sequence.

B. Apply adhesive to walls with a 3/8" nap paste roller. Firmly press fabric to wall using 1/4" nap roller to insure maximum contact with adhesive.

C. Locate seams at least 4" from inside and outside corners. Horizontal joints are not allowed. Install fabric from top to bottom, between two plumb lines for absolute vertical alignment with a minimal trim of 1" left at top. Remove air bubbles, blisters, wrinkles and other defects. Remove excess adhesive immediately; clean walls and protect surfaces.

D. Dry trim edges with row cutter to balance seam across ribs. Double cut seams for tight hairline joints. Trim excess using a broad knife to hold fabric in place so that no movement occurs. Position striped selvage on left-hand side when cutting and installing.

E. Wallcovering installation "must be perfect". Notify Contractor there are any problems achieving this goal prior to proceeding with installation of wallcoverings.

3.3 CLEANUP

A. Upon completion of work, remove surplus materials, rubbish and debris resulting from wall covering installation and leave areas of work in a neat, clean condition.

END OF SECTION
SECTION 10160
METAL TOILET PARTITIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Floor-mounted, overhead braced, toilet partitions.
      a. Baked enamel finish.
   2. Wall mounted urinal screens with brackets.

B. Related Work Not Covered by This Specification:
   3. Toilet Accessories.

1.2 SUBMITTALS

A. Submit samples of manufacturer's full range of standard colors for selection when not selected by Contractor.

1.3 QUALITY ASSURANCE

A. Field measure prior to preparation of shop drawings and fabrication.

B. Furnish inserts and anchorages which must be built into other work for installation of toilet partitions and related work; coordinate delivery with other work to avoid delay.

C. Accessibility Provisions: Where partitions for Handicapped Accessibility use are indicated, comply with provisions of the ADA.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Basis of Design: Sanymetal Products Co.

B. Other metal toilet partition manufacturers as specifically approved by Contractor.

2.2 MATERIALS

A. Steel Sheets for Baked Enamel Finish: ASTM A 591, Class C, galvanized-bonderized.

B. Core Material for Metal Partitions: Manufacturer's standard sound-deadening honeycomb of impregnated Kraft paper, in thickness to provide finished dimension of 1" minimum for doors, panels, and screens, 1-1/4" minimum for pilasters.
C. Pilaster Shoes: ASTM A 167, Type 302/304 stainless steel, not less than 3" high, 20 gage, finished to match hardware.

D. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories of chromium-plated non-ferrous cast alloy.

E. Overhead-Bracing: Continuous extruded aluminum, anti-grip profile, with clear anodized finish.

F. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, chromium-plated steel, or brass finished to match hardware, with theft-resistant type heads and nuts. For concealed anchors, use hot-dip galvanized, cadmium-plated, or other rust-resistant protective-coated steel.

2.3 FABRICATION

A. Furnish units with cutouts, drilled holes, and internal reinforcement to receive partition-mounted hardware, accessories, and grab bars.

B. Door Dimensions: Unless otherwise indicated:
1. Toilet Stalls: 24" wide, in-swinging doors.

C. Floor-Supported Partitions: Provide anchorage devices, complete with threaded rods, lock washers, and leveling adjustment nuts at pilasters, to permit structural connection at floor. Furnish shoe at each pilaster to conceal anchorage.

D. Wall-Hung Screens: Furnish panel units in sizes indicated, of same construction and finish as partition system panels.

E. Hardware for Each Compartment:
1. Hinges: Cutout inset type, adjustable to hold door open at any angle up to 90 degrees. Provide gravity type, spring-action cam type, or concealed torsion rod type, to suit manufacturer's standards.
2. Latch and Keeper: Recessed latch unit, designed for emergency access, with combination rubber-faced door strike and keeper.
3. Door Pull, clothes hook and stops: Manufacturer's standard unit.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install partitions rigid, straight, plumb, and level. Provide clearances of not more than 1/2" between pilasters and panels, and not more than 1" between panels and walls. Secure panels to walls with not less than two stirrup brackets attached near top and bottom of panel. Locate wall brackets so that holes for wall anchorages occur in masonry or tile joints. Secure panels to pilasters with not less than two stirrup brackets located to align with stirrup brackets at wall. Secure panels in position with manufacturer's recommended anchoring devices.
B. Floor-Supported Partitions: Set pilaster units with anchorages having not less than 2" penetration into structural floor, unless otherwise recommended by partition manufacturer. Level, plumb, and tighten installation with devices furnished. Hang doors and adjust so that tops of doors are level with tops of pilasters when doors are in closed position.

C. Screens: Attach with concealed anchoring devices, as recommended by manufacturer to suit supporting structure. Set units to provide support and to resist lateral impact.

3.2 ADJUST AND CLEAN

A. Hardware Adjustment: Adjust and lubricate hardware for proper operation. Set hinges on in-swinging doors to hold open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors (and entrance swing doors) to return to fully closed position.

B. Clean exposed surfaces of partition systems using materials and methods recommended by manufacturer, and provide protection as necessary to prevent damage during remainder of construction period.

END OF SECTION
SECTION 10166

PLASTIC LAMINATE TOILET PARTITIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Ceiling hung plastic laminate toilet compartment screens with particleboard core
      panels and steel core pilasters.
   2. Wall mounted plastic laminate urinal screens with brackets.

B. Related Work Not Covered by This Specification:
   1. Structural steel bracing for support of toilet partitions.
   2. Solid Polymer Toilet partitions.
   3. Metal Toilet partitions.

1.2 SUBMITTALS

A. Submit samples of plastic laminate for selection of colors when not selected by
   Contractor.

1.3 QUALITY ASSURANCE

A. Field measure prior to preparation of shop drawings and fabrication.

B. Accessibility Provisions: Where partitions for Handicapped Accessibility use are
   indicated, comply with provisions of the ADA.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Sanymetal Products.

B. Bobrick.

C. American Sanitary Partition Corp.

D. Any meeting specifications and approved by the Contractor

2.2 PANEL AND PILASTER

A. Plastic Laminate: NEMA Standard LD-3, minimum 0.062" thick, in colors as selected
   from full range of colors available from Formica Corporation, Wilsonart, or Pionite.
   Other manufacturers as acceptable to the Contractor and meeting specifications.

B. Core Material:
   1. Doors and Panels: Manufacturer’s standard particleboard of plywood, in
      thickness to provide nominal dimension of 1” minimum thickness.

2.3 ACCESSORY MATERIALS

A. Concealed Reinforcement: 12 ga. galvanized steel sheet.

B. Exposed hardware stirrups, and accessories: Manufacturer’s standard heavy duty operating hardware and accessories of chromium plated non-ferrous cast alloy.

C. Anchors and Fasteners:
   1. Exposed - stainless steel, chromium-plated steel, or brass finished to match hardware with theft-resistant type heads and nuts.
   2. Concealed - Steel; hot-dip galvanized, cadmium plated, or other rust protecting coating.

2.4 FABRICATION

A. Provide standard doors, panels, screens, and pilasters units with cutouts, drilled holes, and internal reinforcement for hardware and toilet accessories under a separate Section.

B. Provide 24" wide in-swinging doors for ordinary toilet stalls and 32" wide (clear opening) out-swinging doors at stalls equipped for use by handicapped.

C. Plastic Laminate Doors, Panels and Pilasters:
   1. Pressure-laminate one-piece face sheets to core material with no splices or joints, with edges sealed. Seal exposed core material at cutouts to protect against moisture.
   2. Pilasters: Pressure laminate plastic laminate sheets to steel core and seal edges with continuous interlocking strip.

D. Ceiling Hung Partitions: Use galvanized steel anchorage devices, with threaded rods, lock washers, and leveling adjustment nuts at pilasters, to connect to structural support above finished ceiling. Support for pilasters to not transmit load to ceiling finish. Furnish 3" high stainless steel trim piece, finished to match hardware, at each pilaster.

E. Hardware: Furnish hardware for each compartment in partition system, as follows:
   1. Hinges: Cutout inset type, adjustable to hold door open at any angle up to 90 degrees. Provide gravity type, spring-action cam type, or concealed torsion rod type, to suit manufacturer's standard.
   2. Latch and Keeper: Recessed latch unit, designed for emergency access, with combination rubber-faced door strike and keeper.
   3. Coat Hook: Manufacturer's standard unit, combination hook and rubber-tipped bumper.

F. Urinal Screen: 18" x 42" wall supported plastic laminate construction matching partitions.

PART 3 - EXECUTION

3.1 INSTALLATION
A. Comply with manufacturer's recommended procedures and installation sequence. Install partitions rigid, straight, plumb, and level. Provide clearances of not more than 1/2" between pilasters and panels, and not more than 1" between panels and walls. Secure panels to walls with not less than two stirrup brackets attached near top and bottom of panel. Locate wall brackets so that holes for wall anchorages occur in masonry or tile joints. Secure panels to pilasters with not less than two stirrup brackets located to align with stirrup brackets at wall. Secure panels in position with manufacturer's recommended anchoring devices.

B. Ceiling-hung Partitions: Secure pilasters to supporting structure. Hang doors and adjust so that bottoms of doors are level with bottom of pilasters when doors are in closed position.

C. Screens: Attach with concealed anchoring devices as recommended by manufacturer for supporting walls to provide support and to resist lateral impact.

3.2 ADJUSTMENT AND CLEANING

A. Lubricate hardware for proper operation. Adjust hinges on in-swinging doors to hold open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors (and entrance swing doors) to return to fully closed.

B. Clean exposed surfaces of partition systems using materials and methods recommended by manufacturer.

C. Provide protection as necessary to prevent damage during remainder of construction period.

END OF SECTION
SECTION 11160
LOADING DOCK EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: All Loading Dock Equipment as shown on Drawings, as specified herein and as needed for a complete and proper installation.
   1. Dock bumpers.
   2. Recessed dock levelers.
   3. Edge of dock levelers.
   4. Truck Restraints.
   5. Dock seals.

B. Provide operational and maintenance training to the tenant’s dock personnel for each piece of equipment:

C. Specified in Other Sections:
   1. Documents affecting work of this section include, but are not necessarily limited to, General Conditions and Sections in Division 1 of these Specifications.
   2. Demolition general procedures Section 02070
   3. Cast-in-place concrete modifications Section 02072
   4. Sectional overhead doors Section 08360

1.2 SUBMITTALS

A. Make all submittals in compliance with Section 01340.

B. Submit list of items proposed to be provided under this Section.

C. Submit manufacturer’s specifications with installation recommendations.

D. Submit samples of seal fabric showing all available colors.

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workman who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods for proper performance of the work of this section.

B. All Loading Dock Equipment shall comply with the requirements and instructions of the manufacturer.

1.4 PRODUCT HANDLING

A. Comply with the provisions of Section 01620.

B. All materials shall be delivered to the project site in their original, unopened packaging and shall be protected from damage and the effects of the elements.

C. Damaged or deteriorated materials shall be removed from the project site and shall be replaced, in kind, with new materials.

1.5 WARRANTY

A. In addition to standard 12 month warranty covering labor and equipment, provide manufacturer's 10-year warranty covering main structural components of equipment, and 5 year parts warranty on balance of components.

PART 2 - PRODUCTS

2.1 GENERAL

A. Coordinate wiring requirements and current characteristics with building electrical system. See Division 16 Sections.

2.2 MANUFACTURERS

A. Dock bumpers, recessed dock levelers, edge of dock levelers, truck restraints, dock seals.

1. Rite-Hite Corporation
2. Kelly Dock Systems
3. Durable Corporation
5. Any meeting specifications as approved by Contractor.

2.3 PRODUCTS

A. Dock Bumpers: Provide manufacturer's standard units, of sizes indicated and as follows, including hot-dip galvanized anchorage components:

1. Laminated-Tread Bumpers: Provide (2) bumpers at each leveler location fabricated from multiple plies cut from fabric-reinforced rubber tires to a uniform thickness of 4-1/2 inches (114 mm).

B. Recessed Dock Levelers: Provide hinged-lip type for permanent installation in concrete pits preformed in edge of loading platform, and of function, operation, capacity, size, and construction indicated, complete with controls, safety devices, and accessories.

1. Function: Dock levelers shall compensate for differences in height between truck bed and loading platform as follows:
   a. Vertical Travel: Minimum working range shall be 12 inches above and 12 inches below adjoining platform level.
   b. Automatic Vertical Compensation: Compensate for upward or downward movement of truck bed during loading and unloading.
c. Automatic Lateral Compensation: Compensate for canted truck beds of up to 4 inches over width of ramp.
d. Lip Operation: Mechanism that automatically extends and supports hinged lip over dock leveler’s working range, allows lip to yield under impact of incoming truck, and automatically retracts lip when truck departs.
   1. Length of Lip Extension: Not less than 16 inches from ramp edge and not less than 12 inches in front of dock bumpers.
e. Automatic ramp return from raised or lowered positions to stored position as truck departs.

2. Mechanical Operating System: Spring-operated raising and walk-down lowering, with upward-biased-spring counterbalancing mechanism controlled by hold-down device. Raise ramp by operating recessed control handle in ramp to disengage hold-down device. Lower ramp by operating auxiliary control handle to release support legs.

3. Rated Capacity: Not less than 30,000-lb total gross load without permanent deflection or distortion, as tested according to MH 30.1.

4. Safety Devices: Toe guards, cross-traffic support, free-fall protection, and maintenance strut.

   a. Curb Angles: galvanized steel for edge of recessed leveler pit with long concrete anchors welded to angle at as shown on drawings.


C. Edge-of-Dock Levelers: Provide surface-mounted, hinged-lip type, for permanent installation on face of dock platform, of function, operation, capacity, size, and construction indicated, complete with controls, safety devices, and accessories.
   1. Function: Dock levelers shall compensate for differences in height between truck bed and loading platform as follows:
      a. Vertical Travel: Minimum working range shall be 5 inches above and 5 inches below adjoining platform level, with an operating range enabling lip to extend and clear truck bed before contact.
      b. Automatic Vertical Compensation: Compensate for upward or downward movement of truck bed during loading and unloading.
      c. Automatic Lateral Compensation: Compensate for canted truck beds of up to 3 inches over width of ramp.
      d. Lip Operation: Mechanism that automatically extends and supports hinged lip over dock leveler’s working range, allows lip to yield under impact of incoming truck, and automatically retracts lip when truck departs.
         1. Length of Lip Extension: Not less than 15 inches from ramp edge and not less than 12 inches in front of dock bumpers.
      e. Automatic ramp return from raised or lowered positions to stored position as truck departs. Leveler shall be able to be retracted to stored position while truck is at dock.
   2. Mechanical Operating System: Spring-operated raising and walk-down lowering, with a torsion-spring counterbalancing mechanism controlled by a hold-down device. Provide a self-storing lever handle or removable lifting handle.
3. Rated Capacity: Not less than 20,000-lb (9072-kg) total gross load without permanent deflection or distortion, as tested according to MH 30.1.

4. Safety Devices: Cross-traffic support and maintenance strut.


6. Finish and Color: Manufacturer's standard. Paint toe guards yellow to comply with ANSI Z535.1

D. Truck Restraints: Provide manufacturer's standard device consisting of a metal restraining arm designed to engage truck's rear-impact guard and hold truck at loading dock and that moves vertically to adjust to varying height of truck due to loading and unloading.
   1. Manual Operating System: Operate restraint by use of a lifting rod or hook to raise engagement device.
   2. Restraining Capacity: Not less than 30,000 lb (13 608 kg).
   3. Communication System: Manufacturer's standard consisting of warning signs, signal lights, and audible and visual alarms.

E. Dock Seals: Provide manufacturer's standard fabric-covered foam pads designed to compress under pressure of truck body to form an airtight seal at jambs and head of loading dock openings.
   1. Size and type of Jamb Pads: Not less than 12 inches wide and 12 inches deep, sized to suit opening height. Provide tapered jamp pads if appropriate to installation.
   2. Size and Type of Head Pad: Same depth as jamb pads, sized to suit opening width, and as follows:
      a. Type: Adjustable by manufacturer's standard hardware and tension spring or counterweight mechanism.
         1. Height: Not less than 18 inches.
      a. Cover Fabric: Vinyl-coated nylon or polyester with minimum total weight of 40oz./sq. yd.
      b. Fabric Color: As selected by Architect from standard colors.
         1. Wear Exposure: 4-6 inches.
      e. Wood Support Frame: Select structural-grade dimension lumber, DOC PS 20, preservative pressure-treated, kiln dried and factory painted, with steel mounting hardware.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which the work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.
3.2 COORDINATION

A. Coordinate the work of this section with other trades to assure proper and adequate provision for those trades to interfere with this work and schedule this work so as not to delay the installations of other trades.

3.3 INSTALLATION

A. The contractor shall coordinate the placement of any blocking required for the installation of the work of this section.

B. Installation of all Loading Dock Equipment shall be in strict compliance with the manufacturer’s instructions and recommendations.

C. Loading Dock Equipment shall be set plumb, level and properly aligned and shall be securely fastened to substrates and blocking. Adjust and test equipment for safe, efficient operation.

D. Instruct the Contractor on the proper operation of each piece of equipment. Review safety features, routine maintenance, and trouble shooting procedures.

E. Dock equipment shall be protected after installation and shall not be used by the contractor or subcontractors without written approval for the Contractor.

3.4 PROTECTION AND CLEANUP

A. The Sub-contractor shall protect the work of this Section until final acceptance by the sub-contractor. The Contractor shall replace any item damaged prior to final acceptance at no expense to the Owner.

B. Upon completion of the work of this Section, promptly remove from the job site, all surplus materials, empty containers and any other debris caused by this operation.

END OF SECTION
SECTION 15000

MECHANICAL

Reference Duke Mechanical Master Specifications........................................... Jan. 1, Current Year

END OF SECTION
SECTION 16000

ELECTRICAL

Reference Duke Electrical Master Specifications ............................................. Jan. 1, Current Year

END OF SECTION