

Standard Form
Construction Contract Documents
for
Kitchen Renovation

Project No. CMD: 7743-2015-00
Project No. SAI: 15012



Bidding

North Homeless Assistance Center

1700 Blount Road
Pompano Beach, Florida

October 10, 2016

Delta G - Consulting Engineers, Inc.
707 NE 3rd Avenue, Suite 200
Fort Lauderdale, Florida 33304

Singer Architects, Inc.
A Russell and Dawson Company
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Fort Lauderdale, Florida 33304

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**For Singer Architects, Inc.
Thomas A. Manning**

**For Delta G - Consulting Engineers, Inc.
George San Juan, P.E.**

TO THE BEST OF MY KNOWLEDGE THE DRAWINGS AND
THIS PROJECT MANUAL ARE COMPLETE,
AND COMPLY WITH THE BROWARD EDITION OF
THE FLORIDA BUILDING CODE 5TH EDITION (2014).

**North Homeless Assistance Center
Kitchen Renovation
1700 Blount Road
Pompano Beach, Florida**

**Bidding
April 13, 2016**

END OF SECTION

Kitchen Renovation
1700 Blount Road, Pompano Beach FL

North Homeless Assistance Center
Seal Page

SECTION 01010 SUMMARY OF WORK

PART 1 GENERAL

1.1 The COUNTY CONTRACT and Section 01010 – SUMMARY OF WORK

- A. Precedence
 - 1. In case of disagreement between Section 01010 - SUMMARY OF WORK and THE COUNTY CONTRACT, THE COUNTY CONTRACT shall govern.

- B. Related Sections:
 - 1. DIVISION 01 - GENERAL REQUIREMENTS Section(s):
 - a. 01040 - PROJECT COORDINATION
 - b. 01313 - CONSTRUCTION SCHEDULING MANAGEMENT SYSTEM

1.2 DESCRIPTION

- A. Project / Work Identification:
 - 1. The General overall description of the Work of the Contract:

PROVIDE NEW KITCHEN EXHAUST HOOD SYSTEM, ASSOCIATED FOOD SERVICE EQUIPMENT, AND UTILITY CONNECTIONS IN A RENOVATED KITCHEN AND FOOD SERVICE AREA INCLUDING NEW DOORS AND INTERIOR FINISHES FOR THE NORTH HOMELESS ASSISTANCE CENTER AT 1700 BLOUNT ROAD, POMPAÑO BEACH, FLORIDA. THE WORK IS SEQUENCED TO PERMIT DAILY FOOD SERVICE WITHOUT INTERRUPTION.

- B. Contract Documents:
 - 1. Requirements of the Work are contained in the Contract Documents, and included cross-references herein to published information, which is not necessarily bound therein.

- C. Intent:
 - 1. The intent of the Contract is to provide for construction and completion in an efficient manner, in every detail, of the Work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the Work in an efficient manner in accordance with the Contract Documents.

- D. Protection of Underground Facilities:
 - 1. The County has a Zero Tolerance Policy for Protection of Underground Utilities that shall be enforced for this Contract. The policy requires the Contractor's strict adherence to the following:

Before using powered excavation equipment the Contractor shall:

- a. Prepare and receive the Owner's written approval of a site-specific Logistics Plan/Methods Statement
- b. Notify each Utility company to arrange for positive underground location
- c. Receive the written approval of the Owner and Utility companies that the outside limits of all underground utility services have been properly located and staked.
- d. Use excavation methods acceptable to the Owner within 3 feet of such outside limits

No work shall be performed without an Owner- approved completed Quality Control Check-Off Sheet and an Owner inspector being physically present at the area of excavation.

1.3 LIMITS OF CONSTRUCTION AND CONTRACTOR USE OF PREMISES

- A. The work set forth in these bid documents includes the furnishing of all labor, materials, equipment, services and incidentals for construction.

1.4 DESCRIPTION OF THE WORK

- A. Construct temporary exterior food storage, delivery, and waste area, including fencing and temporary utility connections.
- B. Construct temporary interior food service area with utility connections and move existing food service equipment into it.
- C. Demolish interior finishes and miscellaneous items in existing kitchen area. Cut and patch existing floor and roof as required to install new utility connections and exhaust hood system.
- D. Install new systems and finishes. Place and connect new food service equipment.
- E. Install and remove temporary barriers and other facilities.

1.5 SCHEDULING

- A. The Contractor shall be responsible for the planning and scheduling, and coordination of all Work performed under the Contract Documents, so that materials will arrive on schedule and installation will proceed without delay.
- B. The Contractor shall be responsible for scheduling all code inspections for all trades and codes so that temporary and permanent installations can be used immediately upon completion.

1.6 RELATED WORK

- A. County will advise of other projects in construction that may require job site coordination by the Contractor.

1.7 COOPERATION BETWEEN CONTRACTORS

- A. One or more contracts may be required to construct the Project. When separate contracts are awarded for different portions of the Project, the Contractor in each case shall be the person other than the COUNTY who signs each separate contract.
- B. The COUNTY reserves the right to contract for and perform other or additional construction on or near the Work covered by this Contract.
- C. When separate contracts are let within or near the limits of the Project, the Contractor shall conduct his Work so as not to interfere with or hinder the progress of completion of the construction performed by other contractors. Contractors working on the same Project shall cooperate with each other as directed by the Owner.
- D. The Contractor shall assume all liability, financial or otherwise, in connection with his Contract and shall protect and save harmless the COUNTY or the Owner from any and all damages or claims.
- E. The Contractor shall arrange his Work and shall place and dispose of the materials being used as not to interfere with the operations of the other contractors within or near the limits of the Project. The Contractor shall join his Work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

1.8 COUNTY OCCUPANCY

- A. The COUNTY will occupy the North Homeless Assistance Center, including the serving and dining areas, the parking and driveways during the entire period of construction.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01039 COORDINATION OF WORK

PART 1 GENERAL

1.1 The COUNTY CONTRACT and Section 01039 – COORDINATION OF WORK

- A. Precedence
 - 1. In case of disagreement between Section 01039 – COORDINATION OF WORK and THE COUNTY CONTRACT, THE COUNTY CONTRACT shall govern.
- B. Related Sections:
 - 1. DIVISION 01 - GENERAL REQUIREMENTS Section(s):
 - a. 01040 - PROJECT COORDINATION

1.2 COORDINATION OF WORK

- A. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify that the utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. In finished areas except as otherwise indicated, conceal pipes, ducts and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- D. Coordinate completion and clean up of Work of separate Sections in preparation for Substantial Completion.
- E. After COUNTY occupancy of premises, coordinate access to site for correction of defective work and Work not in accordance with Contract Documents, to minimize disruption of COUNTY's activities.

1.3 COORDINATION OF SPECIFICATIONS - (NOT USED)

1.4 TIME FOR COMPLETION

- A. Time limits stated in the Contract Documents are the essence of the Contract. By executing the Agreement the Contractor confirms that the Time For Completion is a reasonable period for performing the Work. The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Time For Completion.

- B. The Contractor, having vast experience in the construction of improvements in South Florida, recognizes that unforeseen conditions occur and that as a normal course of construction there will be rain days, difficulties in obtaining materials and labor, requests for information from the Contractor to the Owner or Consultant, submittals, shortages and inefficiencies in operations.

1.5 DISCREPANCIES, INTERPRETATION AND OMISSIONS

- A. Any room, wall, floor, or ceiling finish not scheduled shall be assumed to be identical to the nearest room of similar use and type for purposes of bidding and construction. Bring any apparent discrepancies to the attention of the Consultant for interpretation prior to commencing with the Work.
- B. Contractor shall request clarifications during the bidding process but if conflicts are discovered in the contract documents after the bids are submitted, the Contractor is deemed to have based his bid upon the more expensive method of performing the Work.
- C. The term “artistic effect” as used herein refers to color, texture, profile, and relation of masses. The Consultant shall be the sole interpreter of the design intent with respect to such matters, but the Consultant’s authority with respect thereto shall not circumvent any other rights of either the COUNTY or the Contractor ascribed to them by other provisions of the Contract.

1.6 DEFINITIONS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.
- B. Furnish: To supply and deliver, unload, inspect for damage (same as supply).
- C. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, and make ready for use.
- D. Provide: To furnish or supply, plus install.
- E. Supply: To supply and deliver, unload, inspect for damage (same as furnish).

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01040 PROJECT COORDINATION

PART 1 GENERAL

1.1 The COUNTY CONTRACT and Section 01040 – PROJECT COORDINATION

- A. Precedence
 - 1. In case of disagreement between Section 01040 – PROJECT COORDINATION and THE COUNTY CONTRACT, THE COUNTY CONTRACT shall govern.
- B. Related Sections:
 - 1. DIVISION 01 - GENERAL REQUIREMENTS Section(s):
 - a. THE COUNTY CONTRACT, Article 9 Supervision.

1.2 DESCRIPTION

- A. Minimum administration and supervisory requirements necessary for coordination of Work on the Project include but are not necessarily limited to the following:
 - 1. Pre-Construction Conference.
 - 2. Coordination and Progress Meetings.
 - 3. Administration and Supervisory personnel.
 - 4. Special Reports.
 - 5. Meeting Minutes

1.3 PRECONSTRUCTION CONFERENCES

- A. Before beginning Work at each Site, the Contractor shall attend a preconstruction conference and bring with him the Project Management Team employed for this Project. In the event a Team member is unable to attend the Contractor shall bring with him a Letter of Introduction in which he advises the full names and duties of the Team member(s) and states that they are assigned to the Project and will be in full responsible charge. This conference will be called by the Owner who will arrange for the Consultant and other interested parties to be present. The Contractor shall also notify his major subcontractors and suppliers of this meeting if their attendance is required. At this time, all parties will discuss the Project under Contract and prepare a program of procedure in keeping with requirements of the Contract Documents. The Contractor's Project Management Team will henceforth make every effort to expeditiously coordinate all phases of the Work, including the required reporting procedure, to obtain the end result within the full purpose and intent of the Contract Documents for this Project.

1.4 COORDINATION AND PROGRESS MEETINGS

- A. The Owner or Architect will prepare a written memorandum on required coordination activities. Included will be such items as required notices, reports,

and attendance at meetings. This memorandum will be distributed to each entity performing construction at the Project Site.

- B. In addition to specific coordination and pre-installation meetings for each element of Work, and other regular project meetings for other purposes, hold general progress meetings at least every week with time coordinated with preparation of payment request. Review present and future needs including interface requirements, time, sequences, deliveries, access, site utilization, temporary facilities and services, hours of Work, hazards and risks, housekeeping, change orders and documentation of information for payment requests.
- C. Discuss whether each element of current Work is ahead of schedule, on time, or behind schedule in relation with updated progress schedule. Determine how behind-schedule Work will be expedited and secure commitments from parties involved. Discuss whether schedule revisions are required to ensure that current Work and subsequent Work will be completed within Contract Time.
- D. Review everything of significance, which could affect progress of Work.
- E. The Consultant records results of the meeting and distributes copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.5 PRE-INSTALLATION CONFERENCES

- A. Record significant discussions of each conference, and record agreements and disagreements, along with final plan of action. Distribute record of meeting promptly to everyone concerned, including Owner and Consultant.

1.6 REPORTING AND SCHEDULES

- A. At each meeting, the Contractor shall distribute a brief summary, in narrative form, of progress of Work since previous meeting and report.
- B. Schedule Updating: The Contractor shall update schedules weekly to include any revisions resulting from information discussed at meetings held since the previous schedule update. The Contractor shall distribute a tabular, early start / total float report to Owner.

1.7 SPECIAL REPORTS

- A. Reporting Unusual Events: When an event of an unusual and significant nature occurs at the site, Contractor shall prepare and submit a special report to the Owner. List chain of events, persons participating, response by the Contractor's personnel, an evaluation of the results or effects and similar pertinent information. Advise the Owner and Consultant as soon as possible when such events are known.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL COORDINATION PROVISIONS

- A. Inspection of Conditions: Inspect conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

END OF SECTION

SECTION 01095 REFERENCE STANDARDS AND DEFINITIONS

PART 1 GENERAL

1.1 The COUNTY CONTRACT and Section 01095 – REFERENCE STANDARDS AND DEFINITIONS

- A. Precedence
 - 1. In case of disagreement between Section 01095 – REFERENCE STANDARDS AND DEFINITIONS and THE COUNTY CONTRACT, THE COUNTY CONTRACT shall govern.
- B. Related Sections:
 - 1. THE COUNTY CONTRACT and General Provisions, Sections, Definitions.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Copies of Regulations: Refer to the General and Supplementary General Conditions for requirements relating to compliance with governing regulations.

1.3 DEFINITIONS

- A. General: Basic contract definitions are included in the Conditions of the Contract.
- B. "Day": Calendar day.
- C. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.
- D. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Owner or Consultant, requested by the Owner or Consultant, and similar phrases.
- E. "Approved": The term "approved," when used in conjunction with the Owner's or Consultant's action on the Contractor's submittals, applications, and requests, is limited to the Owner's or Consultant's duties and responsibilities as stated in the Conditions of the Contract.

- F. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- G. "Furnish": The term "furnish" by Contractor means to supply and deliver to the Project storage site, and unload, unpack, assemble, and perform similar operations.
- H. "Install": The term "install" describes operations at the Project site including the actual unloading, temporary storage, unpacking assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- I. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.
- J. "Installer": An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, who performs a particular construction activity including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.
1. Trades: Using terms such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
 2. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations such as Matrix, Johnson Controls, ProSound, WSA, etc. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.
 - a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade-union jurisdictional settlements and similar conventions.
- K. "Project site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

- L. "Testing Agencies": A testing agency is an independent entity engaged by the COUNTY to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.4 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 16-division format and "MasterFormat" numbering system.
- B. Specification Content: These specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
 - 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
 - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.5 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.
- C. Conflicting Requirements: Where compliance with 2 or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different but apparently equal to the Owner for a decision before proceeding.
 - 1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To

comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Owner for a decision before proceeding.

- D. Copies of Standards: Each entity engaged in construction on the Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source and make them available on request.
- E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authorities having jurisdiction, or other entity applicable to the context of the text provision.

1.6 SUBMITTALS

- A. Permits, Licenses, and Certificates: For the COUNTY's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01111 LIST OF DRAWINGS

Drawing Number

Drawing Title

ARCHITECTURAL

G-0	COVER SHEET
G-1	CODE ANALYSIS, GENERAL NOTES & LEGENDS
SQ-1	SEQUENCE 1
SQ-3	SEQUENCE 3 - DEMOLITION OF SEQUENCE 1
SQ1-LS	SEQUENCE 1 - LIFE SAFETY PLAN
SQ2-LS	SEQUENCE 2 - LIFE SAFETY PLAN
SQ3-LS	SEQUENCE 3 - LIFE SAFETY PLAN
D-1	DEMOLITION FLOOR PLAN
D-3	DEMOLITION REFLECTED CEILING PLAN
A-1	PROPOSED FLOOR PLAN
A-2	NOT USED
A-3	PROPOSED REFLECTED CEILING PLAN
A-4	PROPOSED INTERIOR ELEVATIONS AND BUILDING SECTIONS
A-5	DETAILS
A-5A	DETAILS
A-6	ROOF PLAN
ID-1	PROPOSED FLOOR PATTERN

MECHANICAL

M-100.1	MECHANICAL INDEX, SYMBOL LEGEND AND NOTES
M-100.2	MECHANICAL INDEX, SYMBOL LEGEND AND NOTES
M-101	PROPOSED FLOOR PLAN - MECHANICAL
M-101A	DEMOLITION FLOOR PLAN – MECHANICAL
M-103	KITCHEN HOOD PLAN
M-103.1	KITCHEN HOOD PLAN
M-103.2	KITCHEN HOOD PLAN
M-103.3	KITCHEN HOOD PLAN
M-104	DETAILS – MECHANICAL

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E-100	ELECTRICAL INDEX, SYMBOL LEGEND AND NOTES
E-101	PROPOSED FLOOR PLAN - POWER
E-102	PROPOSED FLOOR PLAN - LIGHTING
E-103	PARTIAL RISER DIAGRAM AND PANEL SCHEDULES

PLUMBING

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P-101	PROPOSED FLOOR PLAN - DOMESTIC WATER

P-102
P-103

PROPOSED FLOOR PLAN - DOMESTIC SANITARY
PLUMBING ISOMETRICS

FOOD SERVICE EQUIPMENT

QF101
QF102

FOODSERVICE EQUIPMENT PLAN AND SCHEDULE
FOODSERVICE EQUIPMENT MECHANICAL SPOT
CONNECTION PLAN

QF103

FOODSERVICE EQUIPMENT ELECTRICAL SPOT
CONNECTION PLAN

QF104

FOODSERVICE EQUIPMENT SPECIAL CONDITIONS PLAN

QF105

FOODSERVICE EQUIPMENT UTILITY LOAD SCHEDULE

QF106

FOODSERVICE EQUIPMENT ELEVATIONS

QF201

FOODSERVICE EQUIPMENT VENTILATION DRAWINGS

SECTION 01250 CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittals.
- B. Documentation of change in Contract Sum/Price and Contract Time.
- C. Change procedures.
- D. Supplemental Instructions
- E. Lump Sum Price change order.
- F. Unit price change order.
- G. Cost Plus Price (Time and Material) change order.
- H. Execution of change orders.
- I. Correlation of Contractor submittals.

1.02 RELATED SECTIONS

- A. Schedule of Values: Detailed monetary valuation of increments of the work.
- B. Document 01250d: Schedule of Unit Prices: Monetary values of unit prices not used to establish the basis for award.
- C. Agreement Form and General Conditions: Monetary values of established unit prices, acceptance of alternates and percentage allowances for Contractor's overhead and profit, requirements for changes in the Work, in Contract Sum/Price, and Contract Time.
- D. Section 01290: Payment Procedures: Payment applications.
- E. Section 01320: Construction Progress Documentation: Work schedule.
- F. Section 01610: Basic Product Requirements: General requirements for products.
- G. Section 01620: Product Options: Options for Products.
- H. Section 01630: Product Substitution Procedures: Substitutions.
- I. Section 01780: Closeout Submittals: Project record documents.

1.03 RELATED FORMS

- A. Document 01250a: Proposal Request
- B. Document 01250b: Change Order Request (Proposal)
- C. Document 01250c: Proposal Worksheet Detail
- D. Document 01250d: Proposal Worksheet Summary
- E. Document 01250e: Construction Change Directive
- F. Document 01250f: Consultant's Supplemental Instructions

1.04 SUBMITTALS

- A. Submit name of the individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

1.05 DOCUMENTATION OF CHANGE IN CONTRACT SUM/PRICE AND CONTRACT TIME

- A. Maintain detailed records of the Work. Provide full information required for evaluation of proposed changes, and to substantiate costs and time adjustments as may be necessitated by changes in the Work.
- B. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.
- C. For all Change Order Proposals, provide additional data to support computations:
 - 1. Quantities of products, labor, and equipment.
 - 2. Taxes, insurance, and bonds.
 - 3. Overhead and profit.
 - 4. Justification for any change in Contract Time.
 - 5. Credit for deletions from Contract, similarly documented.
- D. Support each claim for additional costs, and for work done on a cost plus price basis, with additional information:
 - 1. Origin and date of claim.
 - 2. Name of the Owner's authorized agent who ordered the work and the date of the order.
 - 2. Dates and times work was performed, and by whom.
 - 3. Time records, summary of hours worked and wage rates paid.

4. Original invoices and receipts for:
 - a) Products used, including a listing of quantities.
 - b) Equipment used, including a listing of dates and times of use.
 - c) Subcontracts, similarly documented.

E. Time Impact Analysis:

1. For all Change Orders and Supplemental Instructions where there has been no agreement as to the change's impact on project time, the Contractor shall prepare and submit a Time Impact Analysis illustrating the influence of each change or delay upon the current contract schedule. The Time Impact Analysis shall document:
 - a) A schedule sub-net demonstrating how the Contractor proposes to incorporate the change order or delay into his detailed schedule based upon the date the Change Order or Construction Supplemental Instruction is issued to the Contractor.
 - b) The status of construction at that point in time.
 - c) The start/finish dates of all affected activities utilizing the dates included in the latest updated detailed construction schedule closest to the time of delay or change.
2. Submit the Time Impact Analysis as an attachment to each submitted Document 01250b, Change Order Request (Proposal) or within seven (7) days of receipt of a Construction Supplemental Instruction or other event which might delay with progress of the Work.
3. When the Contractor does not submit a Time Impact Analysis for a specific change order or delay as an attachment to 01250b, Change Order Request (Proposal) or within the time frames specified for supplementary instructions or other delays, then it is mutually agreed that the particular Change Order, or supplementary instruction delay has no effect on contract time except as otherwise allowed elsewhere within the Contract Documents.
4. When approved by the Owner, the sub-nets associated with that particular Change Order, Supplementary Instruction or other delay shall be incorporated into the detailed construction schedule by the Contractor during the first update after such approval.

1.06 CHANGE PROCEDURES

- A. Consultant will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions on Document 01250f: Consultant's Supplemental Instructions.
- B. The Consultant may issue a Document 01250a: Proposal Request which includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid.

1. Contractor shall prepare and submit an estimate within 14 days after receipt of the Proposal Request in the form of Document 01250b, Change Order Request (Proposal) comprehensive supporting documentation as required by the Consultant or the Owner.
 2. Such requests are informational and are not authorizations or instructions to execute the changes or stop the Work in progress.
- C. The Contractor may propose a change by submitting a request for change on Document 01250b, Change Order Request (Proposal) to the Consultant, by describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors, the Owner's forces or others.
1. Required supporting documentation includes comprehensive information concerning anticipated costs and credits to the Owner, a Time Impact Analysis, and other required documentation as required by the Consultant or the Owner.
 2. Such proposals by the Contractor are informational and are not authorizations or instructions to execute the changes or stop the Work in progress.
- D. Preparation of Change Order Items:
1. The Consultant will prepare a recommendation concerning each Change Order and will submit it to the Facilities and Construction Management Division for consideration by the Contract Administrator and its staff.
 2. Upon the recommendation of the Contract Administrator, the Change Order will be prepared for consideration by The Broward County Board of County Commissioners or its delegated approval authority.
 3. Change Orders which are critically needed to facilitate the continuing progress of the Work should be so identified on the submitted Document 01250b, Change Order Request (Proposal). The Owner may issue Document 01250e: Construction Change Directive, directing the Contractor to proceed with Work related to a critically required Change Order which is under consideration, but not yet approved, by The Broward County Board of County Commissioners or its delegated approval authority.

1.07 CONSTRUCTION CHANGE DIRECTIVE

- A. Consultant may issue Document 01250e: Construction Change Directive, signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
- B. Document 01250e, Construction Change Directive, is a written order prepared by the Consultant and signed by the Owner and the Consultant, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

- C. A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order or where Broward County's process for consideration of a Change Order would unreasonably, at the Owner's discretion, prohibit the Contractor from completing time critical elements of the Work.
- D. If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on the methods specified in this Specification Section and in the other applicable Contract Documents.
- E. Upon receipt of Document 01250e, Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Consultant of the Contractor's agreement or disagreement with the method provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum.
- F. A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded and issued as a Change Order upon subsequent approval of the proposed Change by the Owner.
- G. Actual adjustments to the Contract Sum and Contract Time shall not become effective until the changes are formally approved by an Owner approved Change Order. As such, the Contractor may not submit requisitions for payment or make adjustments to the construction schedule until such time as the Owner approves the changes and a Change Order, is issued to the Contractor.

1.08 LUMP SUM PRICE CHANGE ORDER

- A. Content of Lump Sum Price Change Orders shall be based on:
 - 1. Consultant's Document 01250a: Proposal Request and Contractor's responsive Document 01250b, Change Order Request (Proposal) with supporting documentation as mutually agreed between the Owner and the Contractor.
 - 2. Contractor's Document 01250b, Change Order Request (Proposal) as recommended by the Consultant and approved by the Owner.
 - 4. Contractor shall sign and date the, Change Order to indicate agreement with the terms therein.
 - 3. Owner and Consultant will sign Change Order and Owner will issue Change Order and modified Purchase Order as authorization for the Contractor to proceed with the changes.

1.09 UNIT PRICE CHANGE ORDER

- A. Content of Unit Price Change Orders shall be based on either:
 - 1. The Consultant's definition of the scope of the required changes.
 - 2. Contractor's Document 01250b, Change Order Request (Proposal) for a change as recommended by the Consultant and approved by the Owner.

- B. Amounts of the unit prices:
1. Shall be those unit prices previously submitted during bidding.
 2. Or, in the absence of previously submitted unit prices, unit prices shall be developed and mutually agreed to by the Owner and the Contractor. In cases where the Owner and the Contractor cannot mutually agree, a reasonable unit price will be determined by the Consultant and utilized by the Owner and Contractor as the basis of similar Unit Price Change Orders that may occur during the remainder of the Contract term.
- C. When quantities of each of the items affected by the Change Order can be determined prior to the start of the Work related to that Change Order:
1. Owner and Consultant will sign and date the Change Order as authorization for the Contractor to proceed with the changes.
 2. Contractor shall sign and date the Change Order to indicate agreement with the terms therein.
- D. When quantities of the items cannot be determined prior to the start of the Work:
1. The Consultant and Owner will issue Document 01250e, Construction Change Directive, directing the Contractor to proceed with the change on the basis of the established Unit Prices and will list the applicable Unit Prices.
 2. At the completion of the changes:
 - a) The Contractor shall submit documentation to establish the number of units of each item and any claims for modifications to the Contract Time.
 - b) The Consultant will review and evaluate the cost of such Work based on the established unit prices and quantities used.
 3. Consultant will prepare a Change Order to establish the change in the Contract Sum and will submit Change Order for approval.
 4. Changes to the Contract shall only become effective upon approval of the Change Order by The Broward County Board of County Commissioners or its delegated approval authority.

1.10 COST PLUS PRICE CHANGE ORDER

- A. The Consultant and Owner will issue Document 01250e, Construction Change Directive directing the Contractor to proceed with the changes.
- B. At completion of the change, the Contractor shall submit an itemized accounting and supporting data as required in Article 1.05 above.
- C. Consultant will review and evaluate the cost of such work, the required documentation, and the Contractor's calculations of dollar cost and time.

- D. The Consultant or the Owner may observe the progress of the Work related to Cost Plus Price Change Orders on a full-time basis or as necessary to substantiate the Work.
- E. Consultant and Owner will prepare a Change Order to establish the change in the Contract Sum and will submit Change Order for approval.
- F. Changes to the Contract shall only become effective upon approval of the Change Order by The Broward County Board of County Commissioners or its delegated approval authority.

1.11 EXECUTION OF CHANGE ORDERS

- A. Execution of Change Orders: Contract Administrator, through the Consultant will issue Change Orders for signatures of parties. Once executed, the Contract Administrator will obtain the requisite Purchase Orders and will issue the official Change Order documents through the Consultant.

1.12 CORRELATION OF CONTRACTOR SUBMITTALS

- A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum/Price.
- B. The original contract sum and scheduled values shall be copied in all updated Schedule of Values and Request for Payment forms, and the changes, where necessary, shall be noted and itemized separately at the bottom of the forms.
- C. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- D. Promptly enter changes in Project Record Documents.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION



Broward County Commission
 Construction Management Division
 115 South Andrews Avenue, Room A550
 Fort Lauderdale, FL 33301

Phone: (954) 357-6419
 Fax: (954) 357-6411

Document 01250A – Proposal Request

To:

(Contractor)

Proposal Request No.: _____ Date: _____

Project No:
 Project Title:
 Facility Name:

(One Proposal
request per form)

Please submit an itemized quotation for changes in the Contract Sum and/or Time incidental to proposed modifications to the Contract Documents described below.

This is not a Change Order nor a direction to proceed with the Work described below.

Description: (Written description of the Work)

Attachments: (List attached documents that support description):

**Project
Consultant:**

By: (Signature)



Document 01250B – Change Order Request (Proposal)

To:

(Project Consultant)

Change Order

Request No.: _____ Date: _____

Project No:

Project Title:

(One Request
(Proposal) per form)

Facility Name:

This Change Order Request (Proposal) contains an itemized quotation for changes in the Contract Sum and/or Time in response to proposed modifications to the Contract Documents based on Proposal Request No. ___ or other conditions which require this Proposal.

Description of Proposed Change:

Attachments

Reason for Change:

Does Proposed Change involve a change in Contract Sum or Time? Yes No

If yes: Proposed Change in Contract Sum: _____

Proposed Change in Contract Time: _____

Attached Pages: Proposal Worksheet Summary

Proposal Worksheet Detail(s)

Contractor:

By: (Signature)

Attached is supporting information from: Subcontractor Supplier ___



Broward County Commission
 Construction Management Division
 115 South Andrews Avenue, Room A550
 Fort Lauderdale, FL 33301

Phone: (954) 357-6419
 Fax: (954) 357-6411

Document 01250c: Proposal Worksheet Detail

To: _____

(Project Consultant)

Proposal Request No.: _____

Change Order Request No.: _____

Project No: _____

Project Title: _____

Facility Name: _____

Date Prepared: _____

From/Trade: _____

Shaded Areas for Project Consultant's Use Only

Contact: _____ Phone: _____

Additions:

Ref No.	Item Description	Quantity	UNIT PRICES			SUBTOTALS		
			Materials	Labor		Materials	Labor	TOTAL
1								
2								
3								
4								
5								
Subtotal: (Enter this number on Worksheet Summary)								

Deductions:

Ref No.	Item Description	Quantity	UNIT PRICES			SUBTOTALS		
			Materials	Labor		Materials	Labor	TOTAL
1								
2								
3								
4								
5								
Subtotal: (Enter this number on Worksheet Summary)								



Document 01250D – Proposal Worksheet Summary

To:

(Project Consultant)

Project No:
 Project Title:
 Facility Name:

Proposal Request No.: _____	Change Order Request No.: _____
------------------------------------	--

Date Prepared:

From/Trade: _____

Contact:

Phone:

Additions:

	Sheet	Item Description	Materials	Labor	Subtotal
1					
2					
3					
4					
5					
6					
7					
8					
Subtotal Additions:					

Deductions:

	Sheet	Item Description	Materials	Labor	Subtotal
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
Subtotal Deductions:					

Subtotal (Additions - Deductions): _____
10% Subcontractor's Overhead _____
10% Subcontractor's Profit _____
1% Bond Allowance _____
Total _____



Document 01250E – Construction Change Directive

To: (Contractor) Project No: Project Title: Facility Name:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Directive No.: _____</td> <td style="width: 50%; padding: 5px;">Date: _____</td> </tr> </table> (One Directive per form)	Directive No.: _____	Date: _____
Directive No.: _____	Date: _____		

Description of Directed Change:

You are hereby directed to make the following change(s) in this Contract:

Proposed Adjustments

1. The Proposed basis of adjustment of the Contract Sum or Guaranteed Maximum price is:

- Lump Sum Increase Decrease of \$ _____.
- Unit Price of \$ _____ per _____.
- As provided in Specification Section 01250, Contract Modifications.
- As follows:

2. The Contract Time is proposed to be adjusted remain unchanged. The proposed adjustment, if any, is an

- increase of _____ days.
- decrease of _____ days.

When signed by the Consultant and the Owner and received by the Contractor, this document becomes effective immediately as a Construction Change Directive and the Contractor shall proceed with the change(s) described above.		Signature by the Contractor indicates the Contractor's Agreement with the Proposed Adjustments in Contract Sum and Contract Time as set forth in this Construction Change Directive.
Project Consultant	Owner	Contractor
By:	By:	By:
Date	Date	Date



Broward County Commission
Construction Management Division
 115 South Andrews Avenue, Room A550
 Fort Lauderdale, FL 33301

Phone: (954) 357-6419
 Fax: (954) 357-6411

Document 01250F – Consultant’s Supplemental Instructions

To:

(Contractor)

Instruction No.: _____
Date: _____

Project No:
 Project Title:
 Facility Name:

You are hereby notified that the Work shall be carried out in accordance with the following supplemental instructions issued in accordance with and reasonably inferable from the Contract Documents without change in Contract Sum or Contract Time. Prior to proceeding with these instructions, indicate your acceptance of these instructions for a minor change to the Work as consistent with the Contract Documents and return a copy to the Project Consultant.

Description of Interpretation or Minor Change: (Written description of the Work)

Attachments: (List attached documents that support description):

Issued	Accepted
Project Consultant: By: (Signature) _____	Contractor: By: (Signature) _____ Date: _____

Copies: Project Manager Consultants Other:

SECTION 01290 PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for payment.

1.02 RELATED DOCUMENTS

- A. Document 01250c – Proposal Worksheet Detail
- B. Document 01250d – Proposal Worksheet Summary
- C. Document BCF 170: Agreement Form
 - 1. Section 007200: General Conditions
- D. Section 01250: Contract Modification Procedures
- E. Section 01270: Unit Prices
- F. Section 01320: Construction Progress Documentation
- G. Section 01330: Submittal Procedures
- H. Section 01770: Closeout Procedures

1.03 FORMAT

- A. Submit requests for payment on Document 01290a, Application for Payment and Document 01250c – Proposal Worksheet detail, Document 01250d – Proposal Worksheet Summary (as a continuation/detail sheet).
- B. Contractor's electronic media driven forms which replicate the Owner's standard forms may be utilized when pre-approved by the Owner and Project Consultant and when required.
- C. For each item, provide a column for listing each of the following:
 - 1. Item Number.
 - 2. Project Manual Section Number.
 - 3. Description of work.
 - 4. Scheduled Values.

5. Work Completed From Previous Applications.
6. Work Completed This Application.
7. Materials Presently Stored To Date.
8. Total Completed and Stored to Date.
9. Percentage of Completion.
10. Balance to Finish.
11. Retainage.

1.04 PREPARATION OF APPLICATIONS

- A. Present required information in typewritten or computer generated form.
- B. Execute certification by signature of authorized officer.
- C. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.
- D. Entries shall match current data of Schedule of Values, construction schedule, and other reports substantiating the Contractor's progress.
- E. List each authorized Change Order as an extension on Document 01250c – Proposal Worksheet detail, Document 01250d – Proposal Worksheet Summary, listing Change Order number and dollar amount as for an original item of Work.
- F. Prepare Application for Final Payment as specified in Section 01770.

1.05 SUBMITTAL PROCEDURES

- A. Submit five (5) copies of each Application for Payment.
- B. Submit an updated construction schedule with each Application for Payment.
- C. Payment Period: Submit at intervals stipulated in the Agreement.
- D. Personally deliver or transmit to Project Consultant by means ensuring receipt within 24 hours or less. Verify receipt.

1.06 SUBSTANTIATING DATA

- A. Submit data justifying dollar amounts requested for payment on the Document 01290a, Application for Payment. Include as a minimum:

1. Description of Stored Materials, Storage Place, evidence of inspection by the Project Consultant, and verification that the Contractor's purchase order amounts reconcile with the corresponding line items submitted for stored materials on the Application for Payment.
 2. Copies of Document 01320a, Weekly Progress Reports for the respective payment period with copies of Contractor's Daily Log not yet submitted under provisions of Section 01320.
 3. A complete accounting of all payments made to Subcontractors and the balances owed to the Subcontractors with each Application For Payment submitted by the Contractor.
 4. Dollar Value/Time Graphs: Provide graphs as required by Section 007200 in BCF 170.
- B. Upon request, submit data (or allow inspections) verifying:
1. Regular and continuous updating of Project Record Documents.
 2. Timely payment of Subcontractors and Suppliers.
 3. Copies of acquired authorizations and licenses from governing authorities for current performance of the Work.
 4. Listing of subcontractors and principal suppliers and fabricators (including documentation of any applicable licensure and or journeymen workforce supervision)
 5. Evidence of Drug-Free Workplace compliance, safety programs, prohibition of illegal aliens, and other workforce requirements of the Contract Documents.
 6. Records concerning the dates of delivery of materials, lengths of time materials have been stored, and the time remaining until such materials are incorporated into the Work.
 7. Other evidence as might be required, at the discretion of the Owner and Project Consultant, to verify the progress and quality of the Work.
- C. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION



Broward County Commission
Construction Management Division
 115 South Andrews Avenue, Room A550
 Fort Lauderdale, FL 33301

Phone: (954) 357-6419
 Fax: (954) 357-6411

Document 01290a: Application for Payment

To: **Broward County Commission**
Public Works Department
Construction Management Division
 (Owner via Project Consultant)

Application No.:	Period To:	Purchase Order No.:
------------------	------------	---------------------

Project No: _____
 Project Title: _____
 Facility Name: _____
 Project Consultant: _____

Change Order Summary		
Change Orders approved by the School Board in previous months. Total:	Additions	Deductions
	Approved this Month:	
Number	Date Approved	
Totals		
Net change by Change Orders:		

The undersigned contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this application for payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner and that current payment shown herein is now due.

Contractor:

By: (Signature) _____

Date: _____

Notarization

Sworn Before me on this ___ day of ___, ___ State of Florida ___ County
 Commission Expires: _____

Notary Public:

Application is made for Payment, as shown below, in connection with the Contract. The Contractors updated Document 00435, Schedule of Values, is attached as a continuation/detail sheet.

Kitchen Renovation
 1700 Blount Road, Pompano Beach FL

North Homeless Assistance Center
 Application for Payment

- ORIGINAL CONTRACT SUM** \$ _____
- NET CHANGE BY CHANGE ORDER** \$ _____
- CONTRACT SUM TO DATE** (Line 1 plus or minus line 2) \$ _____
- TOTAL COMPLETED AND STORED TO DATE** (Column H of Document 00435) \$ _____
- RETAINAGE**
 - ___ % of Completed Work \$ _____ (Column E + F of Document 00435)
 - ___ % of Completed Work \$ _____ (Column E + F of Document 00435)
 Total Retainage (Line 5a + 5b or total in Column K on Document 00435) \$ _____
- TOTAL EARNED LESS RETAINAGE** (Line 4 less Line 5 Total) \$ _____
- LESS PREVIOUS CERTIFICATES FOR PAYMENT** (Line 6 from previous certificate) \$ _____
- CURRENT PAYMENT DUE** \$ _____
- BALANCE TO FINISH, PLUS RETAINAGE** (Line 3 less Line 6) \$ _____

See reverse for Project Consultant's Certification

Document 01290a: Application for Payment

Project Consultant's Certificate for Payment

In accordance with the Contract Documents, based on on-site observations and the data comprising the above application, the Project Consultant certifies to the Owner that to the best of his knowledge, information and belief, the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment in the AMOUNT CERTIFIED.

AMOUNT CERTIFIED

(Attach explanation if amount certified differs from the amount applied for.)

\$ _____

Project Consultant:

By: _____ Date: _____
(Signature)

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

OWNER'S APPROVAL

AMOUNT APPROVED \$ _____
(Attach explanation if amount approved differs from the amount certified above.)

Approved for Payment by:

Construction Manager:

By: _____ Date: _____
(Signature)

This Approval is not negotiable. The AMOUNT APPROVED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

SECTION 01310

PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Coordination.
- B. Project Administrative Records.
- C. Pre-construction meeting.
- D. Site mobilization meeting.
- E. Progress meetings.
- F. Pre-installation meetings.

1.02 SUBMITTALS

- A. Submit names of staff members, including the Contractor's Project Manager, Superintendent and Superintendent's assistants and other key personnel prior to the Preconstruction Conference. Provide staff names, position assignments, lists of duties and limits of authority, addresses, telephone and Fax numbers, and E-Mail addresses for internet mail services.

1.03 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Prepare coordination drawings where work by separate entities requires fabrication off-site of products and materials which must accurately interface. Coordination drawings shall indicate how work shown by separate shop drawings will interface and shall indicate sequence for installation. Comply with related requirements in Section 01330, Submittal Procedures.
- D. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

- F. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's partial occupancy.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.04 PROJECT ADMINISTRATIVE RECORDS

- A. The Contractor shall maintain administrative records at the project site, unless agreed to otherwise by the Owner, on a current basis. Files will typically include, but not be limited to:
 - 1. Construction Schedule
 - 2. Schedule of Values
 - 3. Contracts or Purchase Orders
 - 4. Project Submittals with Submittal/Approval Logs
 - 5. Equipment Purchase/Delivery Logs
 - 6. The Contract Documents (Drawings, Specifications, Project Manual, Addenda, Change Orders, Supplementary Instructions, etc.)
 - 7. Warranties and Guarantees
 - 8. Cost Accounting Records:
 - a. Labor Costs
 - b. Material Costs
 - 9. Change Order Related Documentation
 - a. Document 01250a: Proposal Request
 - b. Document 01250b: Change Order Request (Proposal)
 - c. Document 01250c: Proposal Worksheet Detail
 - d. Document 01250d: Proposal Worksheet Summary
 - e. Document 01250e: Consultant's Supplemental Instructions
 - g. Supporting documentation for the forms listed above.
 - 10. Payment Request Records
 - 11. Meeting Minutes
 - 12. Cost Estimates
 - 13. Bulletin Quotations
 - 14. Laboratory and Testing Agency Test Reports

15. Insurance Certificates and Bonds
16. Purchase Orders
17. Material Purchase/Delivery Logs
18. Technical Standards
19. Design Handbooks
20. Project Record Documents
21. Operating and Maintenance Manuals & Instructions
22. Daily Progress and Manpower Reports
23. Monthly Progress Reports
24. Correspondence Files
25. Transmittal Records
26. Inspection Reports
27. Bid/Award Information
28. Punch Lists
29. Safety Program and OSHA Documentation
30. Material Safety Data Sheets (MSDS)
31. Subcontractor Lists and licensure documentation.
32. Broward County and Municipal permits, authorizations, inspection reports and other project specific documentation.
33. SDBE utilization and compliance documentation.
34. Other Administrative Documentation as required by the Contract Documents.

1.05 MEETING ADMINISTRATION

- A. The Contractor shall schedule and administer periodic progress meetings, pre-installation meetings and other meetings and conferences as specified within the Contract Documents. For these meetings the Contractor shall:
 1. Prepare agenda.

2. Prepare and distribute written notice of each meeting four (4) days in advance of the meeting date.
 3. Make physical arrangements and accommodation of the meetings.
 4. Preside at meetings.
 5. For those meetings not attended by the Project Consultant:
 - a) Record the minutes of the meeting including all significant proceedings and decisions.
 - b) Reproduce and distribute copies of minutes within three (3) days after each meeting ensuring that copies are distributed to:
 - 1) All participants in the Meeting.
 - 2) To all parties affected by decisions made at the meeting.
 - 3) The Project Consultant and the Owner.
 6. For those meetings attended by the Project Consultant: The Project Consultant will record the minutes of the meeting including all significant proceedings and decisions and distribute copies of the minutes to the parties described above.
- B. The Owner and Project Consultant may schedule and administer meetings and conferences as specified within the Contract Documents or as required by the progression of the Work.
- 1) The administration of these meetings will be by the Project Consultant unless otherwise specified or determined prior to the meeting.
 - 2) Organization, conduct and recording of such meetings shall be by the Project Consultant and similar to that required of the Contractor's meetings.
- C. Representatives of the Contractor, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.06 PRECONSTRUCTION MEETING

- A. Owner will schedule and administer the meeting which will take place at the Facilities and Construction Management Division after issue of Notice to Proceed to the Contractor.
- B. Attendance Required:
1. Owner.
 2. Project Consultant and Sub-consultants.
 3. Contractor's Superintendent and other representatives.
 4. Major Subcontractors and Subcontractors providing critical assemblies, components, systems or equipment.

5. Major Suppliers and suppliers supplying critical assemblies, components, systems or equipment.
6. Owner's Test & Balance consultants and/or Building Commissioning Authority.
7. Others as desired by the Owner, Contractor or Project Consultant.

C. Agenda: (Subject to change/ Adjustment by Owner)

1. Project Team Members:
 - a. Introduction of Project Team Members.
 - b. Designation of responsible personnel.
 - c. Lines of Communication
 - d. Relationship of Broward Construction Management Division personnel and other Departments within Broward County.
2. Distribution and discussion of:
 - a. List of Major subcontractors and suppliers.
 - b. The Construction Schedule
3. Critical Work sequencing
4. Major equipment deliveries and priorities.
5. Procedures and processing of:
 - a. Field decisions and Supplementary Instructions.
 - b. Change Orders.
 - c. Submittals.
 - d. Applications for Payment
 - e. Daily Reports, Monthly Reports and Logs.
 - f. Workforce Composition Requirements
 - g. SDBE Program Requirements
 - h. Equipment start-up and testing.
 - i. Inspection and acceptance of equipment put into service during construction period.
 - j. Building Commissioning programs as applicable.
 - k. Partnering Process as applicable.
6. Additional sets of Contract Documents required.
7. Project Record Documents.
8. Use of Premises:
 - a. Office, work, storage and parking areas.
 - b. Owner's requirements.

9. Construction facilities, controls and construction aids.

10. Temporary Utilities.

11. Safety and first aid procedures.

12. Security procedures.

13. Housekeeping procedures.

D. Project Consultant will record minutes and distribute copies.

1.07 SITE MOBILIZATION MEETING

A. Project Consultant will schedule a meeting at the Project site prior to Contractor occupancy.

B. Attendance Required:

1. Owner.

2. Project Consultant and Sub-consultants.

3. Contractor's Superintendent and other representatives.

4. Major Subcontractors and Subcontractors providing critical assemblies, components, systems or equipment.

5. Major Suppliers and suppliers supplying critical assemblies, components, systems or equipment.

6. Owner's Test & Balance consultants and/or Building Commissioning Authority.

7. Others as desired by the Owner, Contractor or Project Consultant.

C. Agenda:

1. Procedures and requirements for:

a. Use of premises by Owner and Contractor.

b. Owner's requirements and occupancy including limitations on work periods, contractor access to Owner occupied spaces and other restrictions.

c. Construction facilities and controls including location of temporary buildings, signage, fencing, barriers and barricades.

d. Temporary utilities.

e. Access to the site including traffic control, access roads, parking restrictions, environmental controls and security.

f. Identification of benchmarks and datum, including survey and layout of the Work.

g. Work in right-of-way areas and those areas outside the Owner's property line.

- h. Separation of work areas, barriers and dust control.
 - i. Relationship of neighboring properties including noise and dust abatement/control, pest control and other environmental measures.
 - j. Security and housekeeping procedures.
 - k. Protection of existing property and facilities.
 - l. Schedules.
 - m. Procedures for testing.
 - n. Procedures for maintaining record documents.
- 2) Other administrative requirements: Continuation or follow-up of Pre-construction Meeting topics.
- D. Project Consultant will record minutes and distribute copies.

1.08 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required: Contractor's Superintendent, major Subcontractors and suppliers, Owner, Project Consultant and others as appropriate to agenda topics for each meeting.
- D. Location: Contractor's Site Office.
- E. Suggested Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems which impede planned progress.
 - 5. Review of construction schedule, schedule of values and applications for payment.
 - 6. Review proposed changes:
 - a. Effect on construction schedule and on completion date.
 - b. Effect on other Contracts or activities related to Project.
 - 7. Review of submittals schedule and status of submittals.
 - 8. Review of off-site fabrication and delivery schedules.

9. Maintenance of progress schedule.
10. Corrective measures to regain projected schedules.
11. Planned progress during succeeding work period.
12. Coordination of projected progress.
13. Maintenance of quality and work standards.
12. Other business relating to Work.

F. Project Consultant will record minutes and distribute copies.

1.09 PREINSTALLATION MEETING

- A. When required in individual specification sections, convene a pre-installation meeting at work site prior to commencing work of the section.
- B. Attendance:
 1. Parties directly affecting, or affected by, work of the specific section.
 2. Project Consultant
 3. Notify and request Owner representation.
- C. Notify Project Consultant and Owner four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 1. Review conditions of installation, preparation and installation procedures.
 2. Review coordination with related work.
- F. Agenda:
 1. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for:
 - a. Contract Documents.
 - b. Options.
 - c. Related Change Orders.
 - d. Purchases
 - e. Deliveries.
 - f. Shop Drawings, Product Data and quality control Samples.
 - g. Possible conflicts.
 - h. Compatibility problems.
 - i. Time schedules.

- j. Weather limitations.
 - k. Manufacturer's recommendations.
 - l. Compatibility of materials.
 - m. Acceptability of substrates.
 - n. Temporary facilities.
 - o. Space and access limitations.
 - p. Governing regulations.
 - q. Safety.
 - r. Inspection and testing requirements.
 - s. Required performance results.
 - t. Recording requirements.
 - u. Protection.
 - v. Sequencing.
- G. Project Consultant will record minutes and distribute copies.

1.10 REQUESTS FOR INTERPRETATION (RFI)

- A. The Contractor may submit Document 01310a, Contractor's Request for Interpretation, when the Contractor has questions or requires clarifications concerning aspects of the Work not reasonably inferable from the Contract Documents.
- 1. Maintain a log of submitted RFI's.
 - 2. Limit submittal of RFI's to questions or clarifications that are not reasonably inferable from the Contract Documents.
- B. Upon receipt, the Project Consultant:
- 1. Endeavor to respond to submitted RFI's within a reasonable time frame and will attempt to limit the response time to 14 days or less.
 - 2. Will return RFI's that are obvious or otherwise easily inferable from the Contract Documents to the Contractor without a detailed response.
 - 3. Will notify the Owner and Contractor of those RFI's which require either an extended response time or the initiation of the contract modification process specified elsewhere in the Contract Documents.
 - 4. Will issue Document 01250F, Project Consultant's Supplementary Instructions as necessary and appropriate to implement changes resulting from RFI's that do not affect Contract Sum or Contract Time.
 - 5. Will, after coordination and approval by the Owner, issue Document 01250A, Proposal Request, when necessary and appropriate to implement changes resulting from RFI's that affect the Contract Sum or Contract Time.

PART 2 PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION



Document 01310a: Contractor's Request for Information

To:
 (Project Consultant)

RFI No.:	Date:
_____	_____

Attn:
 Project No:
 Project Title:
 Facility Name:

(One RFI item per form)

Subject: _____

- Category:**
- Information not shown on Contract Documents
 - Interpretation of Contract Documents
 - Conflict in Contract Document Requirements
 - Coordination

- Reference:**
- Drawing Reference
 - Spec/Project Manual Reference
 - Other:

Spec No.	Section Title	Paragraph Reference	Drawing Sheet No.	Detail Reference

Request:

Contractor:
 Retain copy for Project Files

By: (Signature)

Contractor:

Replies to RFI's will be made through the Owner on the County's standard Supplemental Instructions form for those requests that are not directly or obviously inferable from the Contract Documents.

SECTION 01313 CONSTRUCTION SCHEDULING MANAGEMENT SYSTEM

PART 1 GENERAL

1.1 The COUNTY CONTRACT and Section 01313 – CONSTRUCTION SCHEDULING MANAGEMENT SYSTEM

- A. Precedence
 - 1. In case of disagreement between Section 01313 – CONSTRUCTION SCHEDULING MANAGEMENT SYSTEM and THE COUNTY CONTRACT, THE COUNTY CONTRACT shall govern.

- B. Related Sections:
 - 1. THE COUNTY CONTRACT Article: Progress Payment
 - 2. DIVISION 01 - GENERAL REQUIREMENTS Section(s):
 - a. 01040 – PROJECT COORDINATION
 - b. 01290 – PAYMENT PROCEDURES
 - c. 01370 - SCHEDULE OF VALUES
 - d. 01700 - PROJECT CLOSEOUT

1.2 REQUIREMENT INCLUDED

- A. Procedures:
 - 1. Procedures of preparation and submittal of Construction Progress Schedules and periodic updating.
 - 2. The Contractor and all subcontractors shall participate in the Construction Scheduling Management System as provided for in these Specifications.

1.3 SCHEDULING COORDINATION MEETINGS

- A. Regular Meetings:
 - 1. There will be regular Scheduling Coordination meetings, which will generally be a part of the weekly construction coordination meetings. The first such Scheduling Coordination meeting will be one week after the date of Notice to Proceed and each subsequent Scheduling Coordination meeting will be every week thereafter. The Owner may schedule additional Scheduling Coordination meetings. Unless otherwise directed by the Owner, the Scheduling Coordination meetings will be held at the Courthouse and shall be attended by the Contractor and applicable subcontractors. The Contractor and applicable subcontractors shall be represented at each Scheduling Coordination meeting by a person or persons authorized to make decisions and commitments regarding schedules, crew sizes, sequence(s) or events and similar scheduling matters on behalf of said Contractor or subcontractor. The Owner may authorize specified subcontractors not to attend one or more of the Scheduling Coordination meetings.

2. The Scheduling Coordination meeting will be a forum to establish the true state of completion of the project, to update the status of the delivery of material and equipment items and to prepare or revise the detailed Near Term Progress Schedule.

1.4 PREPARATION OF SCHEDULES

- A. Scheduling Coordination meeting, the Contractor shall prepare and distribute a report including the following: (A) a copy of the latest approved Near Term Progress Schedule (Two Week Look Ahead Schedule); (B) a status review of the project; (C) a written analysis of problem areas and proposed solutions thereto; and (D) a listing of the more critical activities on which work should be accomplished before the next Scheduling Coordination meeting.
- B. The Contractor shall provide all schedules required under this Article. The Owner may, from time to time, propose revisions to the Overall Project Schedule and Near Term Schedules to reflect the current status of the project. Draft revisions will be circulated to all parties for review and comment. When approved by the Owner, the revised Overall Project Schedule and the Near Term Schedules will become effective.

1.5 RESCHEDULING

- A. In the event any activity is behind schedule and, unless a time extension is claimed and granted in accordance with the applicable requirements of the General Conditions, the Contractor shall reschedule each such activity so as not to delay the Contract completion. If such rescheduling is not accomplished within a reasonable time, the Contractor and the Owner shall meet to develop a plan to bring each such activity back on schedule. Said program may include any or all of the following:
 1. Using overtime/primetime work to complete or bring current the activity;
 2. Increasing the crew size(s) and/or number of shifts to a level sufficient to complete or bring current the activity;
 3. Any combination of activities that will complete or bring current the activity.
- B. Unless a claim for time extension, additional compensation or for any other relief under the Contract is proceeded in accordance with the provisions of applicable requirements of the General Conditions, the Contractor shall perform the work under the aforesaid program with no increase in the bid.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01320 CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Construction Schedule
- B. Contract Progress Reporting
- C. Construction Photographs
- D. Construction Aerial Photographs

1.02 RELATED SECTIONS

- A. Section 01010 - Summary of Work: Work sequence, Owner Occupancy.
- B. Section 01290 - Payment Procedures: Application for payment and schedule of values.
- C. Section 01310 - Project Management and Coordination: Progress Meetings
- D. Section 01330 - Submittal Procedures: Shop drawings, product data, samples and other submittals.

1.03 INITIAL CONSTRUCTION SCHEDULE

- A. Format
 - 1. Prepare initial schedule as a horizontal bar chart with separate bar for each major portion of Work or operation, identifying first work day of each week and subsequent major milestones as specified below.
 - 2. Sequence of Listings: The chronological order of the start of each item of Work.
 - 3. Scale and Spacing: To provide space for notations and revisions.
 - 4. Sheet Size: Multiples of 8-1/2 x 11 inches.
- B. Content
 - 1. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
 - 2. Dates of Substantial Completion for the Work or its defined stages: Conform to the dates established in the Contract Documents.

3. Identify each item by the appropriate assembly designation as established by the Contract Documents and as outlined in the "CSI/CSC Unifomat Uniform classification of Construction Systems and Assemblies" 1992 or later edition as published by the Construction Specifications Institute.
4. Identify work of separate stages, phases, buildings, floor levels and other logically grouped activities and major project milestones based on the schedule of values (Document 01250c – Proposal Worksheet Detail and Document 01250d – Proposal Worksheet Summary) as minimum level of detail
5. Provide sub-schedules for each stage of Work identified in Section 01110 or elsewhere in the Contract Documents.
6. Provide sub-schedules to define critical portions of the entire schedule.
7. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
8. Provide separate schedule of submittal dates for shop drawings, product data, and samples, including Owner furnished products, and dates reviewed submittals will be required from Project Consultant. As applicable, indicate decision dates for selection of finishes. Refer to related requirements in Section 01330, Submittal Procedures.
9. Indicate projected delivery dates for Owner furnished products.

C. Schedule Submittals

1. Submit initial schedules as Post Award Information as required by Section 007200 in BCF 170. After review, resubmit required revised data within ten days.
2. Submit revised Progress Schedules as specified below with each Application for Payment.
3. Submit the number of opaque reproductions which Contractor requires, plus three copies which will be retained by the Project Consultant and Owner.

D. Distribution of Schedule:

1. Distribute copies of reviewed schedules to Project site file, Subcontractors, suppliers, and other concerned parties.
2. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

1.04 CONSTRUCTION SCHEDULES

A. Quality Assurance:

1. Scheduler: Provide a scheduling specialist (from either the Contractor's own staff or as a consultant to the Contractor) specializing in CPM with experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed printout within 72 hours of request.

B. Format

1. Listings: Reading from left to right, in ascending order for each activity. Identify each activity with the applicable identification number.
2. Diagram Sheet Size: 30 inches high x width required.
3. Scale and Spacing: To allow for notations and revisions.

C. Schedules

1. Prepare network analysis diagrams and supporting mathematical analyses based upon information provided by Contractor using "Primavera Project Planner" by Primavera Systems, Inc..
2. Illustrate order and interdependence of activities and sequence of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.
3. Illustrate complete sequence of construction by activity, identifying work within each major building area, wing, site area, project phase or other uniform breakdown of the Work.
 - a. Provide dates for submittals and return of submittals; dates for procurement and delivery of critical products; and dates for installation and provisions for testing.
 - b. Provide legend for symbols and abbreviations used.
 - d. Allow no single activity to exceed, in days, ten percent of the total project duration.
4. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identifying for each activity:
 - a. Activity identification number.
 - b. Preceding and following event numbers.
 - c. Activity description.
 - d. Estimated duration of activity.
 - e. Earliest start date.
 - f. Earliest finish date.
 - g. Actual start date.
 - h. Actual finish date.
 - i. Latest start date.

- j. Latest finish date.
 - l. Total and free float;-float time shall accrue to Owner and to Owner's benefit.
 - m. Percentage of activity completed.
 - n. Responsibility.
5. Analysis Program: Capable of accepting revised completion dates and recomputation of all dates and float.
 6. Required Sorts: List activities in sorts or groups:
 - a. By work item or event number from lowest to highest.
 - b. By amount of float, then in order of early start.
 - c. By responsibility in order of earliest possible start date.
 - d. In order of latest allowable start dates.
 - e. In order of latest allowable finish dates.
 - f. Listing of basic input data which generates the report.
 - g. Listing of activities on the critical path.
 - h. Coordinate contents with The schedule of values (Document 01250c – Proposal Worksheet Detail and Document 01250d – Proposal Worksheet Summary).
- D. Submittals:
1. Submit first Construction Schedule for review after the approval of the Initial Schedule specified above and not later than five (5) days prior to the Contractor's first application for payment.
 - a. Schedule: Comprised of a complete network analysis consisting of network diagrams and mathematical analysis.
 - b. Include written certification that mechanical, electrical and other major Subcontractors have reviewed and accepted proposed schedule.
 2. Submit updated network schedule with each Application for Payment accurately depicting progress to date of application; and whenever major schedule elements fall two (2) weeks behind original schedule. Monthly schedule submittals shall include:
 - a. Monthly Bar Chart Update:
 1. A bar chart comparing current progress to the most recently approved target schedule.
 2. Sort the chart by area, Early Start Date, and show the activity identification description, Remaining Duration Total Float, and percentage complete.

3. Submit on 8-1/2 inch by 11 inch paper.
- b. Task Summary Report:
 1. A summary bar chart showing current and target schedule. A tabular portion of the bar chart shall show the early start dates, early finish dates, remaining duration and percentage complete.
 - c. Tabular Reports:
 1. Schedule Report: List the current status of all activities, sorted by activity number from lowest to highest by area, phase or other breakdown.
 2. Total Float Report: List all uncompleted activities sorted by total float, then by early start date.
3. Submit complete schedule and updates on 3-1/2 inch computer diskettes accompanied by three (3) opaque reproductions.
 - a. Comply with electronic media requirements specified for Section 01780, Closeout Submittals.
 - b. Ensure submittal of complete information and media.
 4. Submit under provisions specified in Section 01330, Submittal Procedures.
- E. Review And Evaluation:
1. Project Consultant and Owner will review network diagrams and analysis and provide comments thereon.
 2. Participate in joint review and evaluation of network diagrams and analysis with Project Consultant at each submittal if requested by Project Consultant.
 3. Evaluate project status to determine work behind schedule and work ahead of schedule.
 4. After review, revise as necessary as result of review, and resubmit within five (5) days.
- F. Updating Schedules:
1. Maintain schedules to record actual start and finish dates of completed activities.
 2. Indicate progress of each activity to date of revision, with projected completion date of each activity. Update diagrams to graphically depict current status of Work.
 3. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
 4. Indicate changes required to maintain Dates of Substantial and Final Completion

5. Submit sorts required to support recommended changes.
6. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect.

G. Distribution of Schedule:

1. Distribute copies of reviewed schedules to project site file, Subcontractors, suppliers, and other concerned parties.
2. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.
3. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect including the effect of changes on schedules of separate contractors or the Owner's forces.

1.05 CONSTRUCTION PROGRESS REPORTING

A. Contractor's Daily Log

1. Maintain a daily log of project activity including, but not limited to:
 - a. Hours on the project site.
 - b. Weather conditions (including a summary of changing conditions through the day).
 - c. Daily construction activity.
 - d. Number of workers in each trade on site (and the duration of their stay).
 - e. Number of journeymen and certified journeymen on site for each trade.
 - f. General observations.
 - g. Written and verbal directives to the Contractor.
 - h. Visits of governmental officials.
 - i. Visits by the Project Consultant or his Sub-consultants.
 - j. Visits by the Owner.
 - k. Inspections by jurisdictional authority for work in right-of-ways or outside the Owner's property line.
2. Make log immediately available on site to the Project Consultant, Owner and other jurisdictional authorities.

B. Contractor's Weekly Progress Report

1. Summarize Daily Log on Document 01320a: Weekly Progress Report. Include reports from subcontractors.
2. Weekly Report Submittals:
 - a. Deliver five (5) copies of Document 01320a: Weekly Progress Report to the Project Consultant at the end of each week.

- b. Attach a copy of the Contractor's daily log to each copy of Document 01320a: Weekly Progress Report submitted.
 3. Submit under provisions of Section 01330 – Submittal Procedures.
 4. Submit copies of Document 01320a, Weekly Progress Reports for the respective payment period with copies of Contractor's Daily Log not yet submitted under provisions of Section 01290, Payment Procedures.

C. Special Reports:

1. Reporting Unusual Events: When an event of an unusual and significant nature occurs at the site, prepare and submit a special report.
 - a. List chain of events, persons participating, response by the Contractor's personnel, an evaluation of the results or effects and similar pertinent information.
 - b. Advise the Owner and Project Consultant in advance when such events are known or predictable.
2. Submit special reports to the Project Consultant and the Owner within one day of an occurrence. Submit copies of the report to other entities that are affected by the occurrence.
3. Reporting Accidents: Prepare and submit reports of significant accidents on the project site or anywhere else the Work is in progress.
 - a. Record and document data and actions. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury.

1.06 CONSULTANT'S OBSERVATIONS

- A. The Consultant will make periodic visits to the Work and make observations of the progress of the Work as required elsewhere in the Contract Documents:
- B. The Consultant (and Sub consultants through the Consultant) will:
 1. Prepare and distribute Document 01320b, Periodic Observation Report to the Contractor, Owner and other concerned parties after each visit to the Site.
 2. Prepare and distribute Document 01320c, Non-Conforming Work Notice, to the Contractor, Owner and other concerned parties when deficient or otherwise non-conforming Work is discovered during visits to the Work.
 3. Take appropriate follow-up actions as required by the Contract Documents to facilitate the continuing progress of the Work and its conformance to the requirements of the Contract Documents.

1.07 CONSTRUCTION PHOTOGRAPHS

- A. Provide photographs of site and construction throughout progress of Work.
- B. Employ professional commercial photographer acceptable to the Project Consultant, to take construction record photographs periodically during the course of work. Photographer shall be a firm or individual of established reputation who has been regularly engaged as a professional photographer for not less than two years. Provide two references for which the photographer has performed work of similar nature during the preceding twelve (12) months.
- C. Release of Photographs: Photographs shall not be released to parties other than the Owner and Project Consultant without the Owner's permission.
- D. Take photographs 3 days prior to each application for a payment, and as follows:
 - 1. Existing site and facility (both interior and exterior) conditions prior to the start of the Contractor's activities.
 - 2. Sequence 1.
 - 3. Sequence 2.
 - 4. Sequence 3.
 - 5. Final completion.
 - 6. As necessary to supplement Contractor's Daily or Monthly Reports.
 - 7. As necessary to document Change Proposals and/or facilitate other communications regarding the Work.
- E. Quantities Required:
 - 1. Photograph the Work from different views to show degree of completion of progress as well as unusual or special construction procedures. Submit minimum of ten (10) photographs showing different views for each application for payment.
- F. Prints:
 - 1. Full color.
 - 2. PDF and JPG
 - 3. Cover page in PDF identifying project. Use PDF text box comment to identify each view.
 - 4. Size: Letter
- H. Technique

1. Provide factual presentation.
1. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.

I. Photography Submittals

1. Deliver PDF and JPG with each Application for Payment via e-mail to Consultant with transmittal letter specified under Section 01330 – Submittal Procedures.
2. Deliver PDF and JPG not required for an Application for Payment three (3) days after exposure with transmittal letter specified under Section 01330 – Submittal Procedures.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION



Document 01320a: Weekly Progress Report

To:

(Project Consultant)

Report No.: _____ Date: _____

Project No:
 Project Title:
 Facility Name:

(One Weekly Report per form)

Contract Completion Date/Time: _____	Approved Time Extensions: _____
Date Construction Started: _____	Contract Completion Date/Time: _____
Revised Completion Date: _____	Percent of Project Completion: _____
Percent of Time Used: _____	Days Elapsed: _____
Is Project on Schedule: <input type="checkbox"/> Yes <input type="checkbox"/> No	If Not, Why: _____

Summary of Construction Activities Since Last Report:

Attachments

Attach Additional Sheets as Necessary

Contractor:

By: (Signature)

Attached is supporting information from:
 Subcontractor
 Supplier

Copies to: Contractor
 Project Consultant
 Owner



Document 01320b: Periodic Observation Report

To: _____

Report No.: _____

Date: _____

Project No: _____
 Project Title: _____
 Facility Name: _____

Time: _____

AM PM

Superintendent Present: _____

Yes No

Record Doc's Updated: _____

Yes No

Proper Job Trailer Postings: _____

Yes No

Weather

Site Conditions

Day

<input type="checkbox"/> Clear	<input type="checkbox"/> Hot	<input type="checkbox"/> Clear	<input type="checkbox"/> Dusty	<input type="checkbox"/> Mon	<input type="checkbox"/> Fri
<input type="checkbox"/> Overcast	<input type="checkbox"/> Warm	<input type="checkbox"/> Muddy	<input type="checkbox"/> Other:	<input type="checkbox"/> Tues	<input type="checkbox"/> Sat
<input type="checkbox"/> Rain	<input type="checkbox"/> Cold	Temperature Range: _____		<input type="checkbox"/> Wed	<input type="checkbox"/> Sun
<input type="checkbox"/> Windy	<input type="checkbox"/> Other:	Wind From: _____		<input type="checkbox"/> Thur	

Persons

Contacted: _____

Items Discussed: Improvements to leased space(s) Requested a work schedule be completed by Landlord.

Work Observed:

Attachments: Provide attachment for more detailed descriptions and supporting documentation.

Materials/Equipment Delivered:

Item:	Date:	Condition:	Properly Stored:	Utilization:
_____	_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Used <input type="checkbox"/> Idle
_____	_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Used <input type="checkbox"/> Idle
_____	_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Used <input type="checkbox"/> Idle

Provide attachment to list additional items, note exceptions and detail improper storage.

Workforce:

Total Workers Present: _____ Trades: _____
 Foremen: _____ Journeymen: _____ Apprentices: _____ Helpers: _____
 Other Contractors on Site: _____

Non-Conforming Work Notices Issued: Yes No (Provide copies of Nonconforming Work Notices.)

Remarks/Concerns:

Distribution:

Contractor
 Project Files

By: (Signature)

Title:

SECTION 01330 SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittal Schedule.
- B. Contractor's Responsibilities
- C. Submittal procedures.
- D. Proposed Products List
- E. Shop drawings.
- F. Product data.
- G. Samples.
- H. Manufacturers' instructions.
- I. Manufacturers' certificates.
- J. Manufacturer's Field Reports.
- K. Miscellaneous Submittals
- L. Project Consultant's Review

1.02 RELATED SECTIONS

- A. Section 01290: Payment Procedures
- B. Section 01320: Construction Progress Documentation
- C. Section 01770: Closeout Procedures
- D. Section 01780: Closeout Submittals

1.03 SUBMITTAL SCHEDULE

- A. Submit submittal schedule as a separate attachment to the initial construction schedules required as Post Award Information (as required by Section 007200 in BCF 170) and as further specified in Section 01320, Construction Progress Documentation.

- B. Submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product and information related to submittals required for each product:
 - 1. Correlate this submittal schedule with the listing principal Subcontractors and with the contents of the Project Manual.
 - 2. Prepare the Schedule of Submittals in chronological order of submittals. Show category of the submittal (by specification section number), name of subcontractor, a generic description of the Work covered, related specification numbers for adjacent or interfacing Work, activity or event number on the construction schedule, the scheduled date for the first submission, resubmittal, and the final release or approval by the Project Consultant and/or Owner.
 - 3. Coordinate different submittals for the same or directly related units of work to avoid delays resulting from the Project Consultant's need to review submittals concurrently for coordination. No extension of time will be granted as a result of failure to transmit submittals to the Project Consultant sufficiently in advance of the Work.
- C. Assign each required submittal a sequential "Submittal Number" reflecting the chronological order in which the submittal is to be transmitted to the Project Consultant.

1.04 CONTRACTOR RESPONSIBILITIES

- A. Prepare and review submittals prior to transmittal to the Project Consultant.
- B. Verify:
 - 1. Field Measurements
 - 2. Field Construction Criteria
 - 3. Product numbers and other incidental changes to specified products subsequent to publication of the Project Manual.
- C. Coordinate each submittal with the requirements of the Work and the Contract Documents.
- D. Project Consultant's Review:
 - 1. Contractor's responsibility for errors and omissions in submittals is not relieved by the Project Consultant's review.
 - 2. Contractor's responsibility for deviations in submittals is not relieved by the Project Consultant's review of submittals unless the Owner and the Project Consultant give written acceptance of specific deviations.
- E. Notify the Project Consultant in writing, at time of submission, of deviations in submittals from the requirements of the Contract Documents.
- F. Obtain pre-approval of the Project Consultant for partial submittals concerning complex building systems or assemblies.

- G. Do not begin Work which requires submittals until return of submittals from the Project Consultant bearing the Project Consultant's stamp indicating approval of the submittal.
- H. Reproduce and distribute copies of approved submittals to pertinent parties.
- I. Maintain copies of all approved submittals at the project site for quality control comparisons throughout the course of the Work.

1.05 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Document 01330a, Transmittal Form.
- B. Sequentially number the transmittal forms with the number established on the Submittals Schedule:
 - 1. Affix submittal number to all submittal materials, related documentation, and any correspondence concerning a submittal.
 - 2. Resubmittals to have original number with an alphabetic suffix.
- C. Identify each component of submittal with a permanent label for identification. Provide the following information on the label:
 - 1. Project Name.
 - 2. Submittal Number (as outlined above).
 - 3. Date.
 - 4. Name and address of the Project Consultant.
 - 5. Name and address of the Contractor.
 - 6. Name and address of the Subcontractor.
 - 7. Name and address of the Supplier.
 - 8. Name of Manufacturer.
 - 9. Number and title of related specification section.
 - 10. Drawing number and detail reference.
 - 11. Applicable standards (such as ASTM or ANSI numbers)
 - 12. Similar information as necessary to define and distinguish submittal.

- D. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
1. Submittals shall be fully approved by the Contractor prior to their submittal to the project Consultant.
 2. Submittals not bearing the Contractors approval stamp and/or not fully approved by the Contractor will be returned to the Contractor without review.
 3. Unsolicited or informational submittals not required by the Contract Documents will be returned to the Contractor without review.
 4. Partial submittals not preapproved by the Project Consultant will be returned to the Contractor without review.
- E. Schedule submittals to expedite the Project, and deliver to the Project Consultant at its business address.
1. Provide Owner with "concurrent informational copies" of special systems including, but not limited to:
 - a. HVAC Systems and Controls.
 - b. Fire Alarm Systems.
 - c. Electrical Power Systems.
 - d. Intercom Systems
 2. Deliver concurrent informational copies to the Owner at:
- Broward County
Construction Management Division
115S. Andrews Ave. #A550
Fort Lauderdale, FL 33301
- F. Coordinate submission of related items.
- G. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- H. Provide space for Contractor and Project Consultant's review stamps.
- I. Do not reproduce Contract Documents as the basis for any submittal.
- J. Revise and resubmit submittals as required, identify all changes made since previous submittal.
1. Shop Drawings:
 - a. Revise initial drawings as required and resubmit as specified for initial submittal.

- b. Indicate on the drawings any changes which have been made other than those required by the Project Consultant.
 2. Product Data, Samples and other Submittals: Transmit new submittal as required for initial submittal.
 3. Revise and correct rejected submittals to make the Work conform to the requirements of the Contract Documents. If requested, the Project Consultant will meet with the Contractor to advise and assist in achieving compliance.
 4. Contractor shall reimburse the Owner for all time spent by the Project Consultant and associated Subconsultants for meetings, consultations and reviews required on re-submittals after the first re-submittal until the rejection is removed. Charges will be based on the Owner's actual costs and will be deducted from the Contract Sum in the form of a Change Order.
- K. Distribute copies of reviewed submittals to concerned parties including Subcontractors, suppliers, fabricators, manufacturers, installers and others as required for the proper performance of the Work. Instruct parties to promptly report any inability to comply with provisions.

1.05 PROPOSED PRODUCTS LIST

- A. Within 15 days from receipt of Notice to Proceed, submit complete list of major products proposed for use as required by Section 01610, Basic Product Requirements.

1.06 SHOP DRAWINGS

- A. Original drawings, prepared by the Contractor, Subcontractor, supplier or distributor which illustrates some portion of the Work; showing fabrication, layout, setting or erection details.
- B. Utilize a qualified detailer to prepare shop drawings.
- C. Submit in the form of one (1) correctable, reproducible transparency and three (3) opaque reproductions. (Opaque reproductions will be retained by the Project Consultant and the Owner.)
 1. Provide on 24 inch by 36 inch sheets or 8-1/2 inch by 11 inch sheets.
 2. Provide accurately scaled drawings showing dimensions and noting which are based on field measurement.
 3. Identify materials and products shown.
 4. Indicate compliance with standards and special coordination requirements.
 5. Identify details by reference to sheet and detail numbers shown on the Contract Documents.
 6. Provide project information as required above in a title block. Allow space of not less than 20 square inches adjacent to the title block for Project Consultant's review stamps.

- D. After review, reproduce and distribute in accordance with Article on Procedures above and for Record Documents described in Section 01780 - Closeout Submittals.

1.07 PRODUCT DATA

- A. Manufacturer's standard schematic drawings:
 - 1. Modify drawings to delete information not applicable to the Work.
 - 2. Supplement standard information to provide additional information applicable to the Work.
- B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data.
 - 1. Clearly mark each copy to identify pertinent materials, products or models.
 - 2. Show dimensions and clearances required.
 - 3. Show performance characteristics and capacities.
 - 4. Show wiring diagrams and controls.
 - 5. Supplement manufacturers' standard data to provide information unique to this Project.
- C. Submit the number of copies which the Contractor requires, plus two copies which will be retained by the Owner.
- D. After review, reproduce and distribute in accordance with Article on Procedures above and for Record Documents described in Section 01780, Closeout Submittals.

1.08 SAMPLES

- A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- B. Office Samples: Submit samples of finishes in the specified colors, textures and patterns.
- C. Field Samples and Mock-Ups:
 - 1. Provide field samples and mock-ups as specified in Section 01450, Quality Control.
 - 2. Construct each sample or mock-up complete, including all work of all trades required in finishing the Work.
- D. Provide units identical with final condition the proposed materials or products for the Work.
 - 1. Include "range" of samples (not less than 3) where unavoidable variations must be expected, and describe or identify variations between units of each set.

2. Provide full set of optional samples where Project Consultant's selection is required. Prepare samples to match Project Consultant's sample where so indicated.
- E. Include identification on each sample, with full Project information as required above.
 - F. Submit the number or samples specified in individual specification Sections; one of which will be retained by the Project Consultant.
 - G. Color selections for interior materials will not occur until the Project Consultant has approved samples of all interior finish items. No extension of time or substitution of materials will be granted as a result of the Contractor's failure to provide the Project Consultant with timely color samples of interior finish materials.
 - H. Reviewed samples which may be used in the Work are indicated in individual specification Sections and must be in undamaged condition when incorporated into the Work.

1.09 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, in quantities specified for Product Data.
- B. Identify conflicts between manufacturers' instructions and Contract Documents.

1.10 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification Sections, submit manufacturers' certificate to Owner for review, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Owner.
- D. Submit original documents or copies of project specific certificates to be issued in relation to the Work of this Contract. Standard, generic sample certificates are not acceptable.

1.11 MANUFACTURER'S FIELD REPORTS

- A. Submit three (3) copies of reports within 15 days of observation to Project Consultant for information.

1.12 MISCELLANEOUS SUBMITTALS

- A. Inspection and Test Reports: Classify each inspection or test report as a "shop drawing" or "product data" depending upon whether the report is specifically prepared for this project, or a standard publication of workmanship testing at the point of production. Process inspection and testing reports accordingly.

- B. Survey Data: Where required in the individual specification sections, submit survey for property, field measurements, quantitative records of actual work, damage surveys, and other similar data. None of the specified copies will be returned to the Contractor.
- C. Standards: Where submittal of a standard is required, and where copies of the standard are specified as an integral part of a "product data" submittal, submit two (2) for the use of the Project Consultant and the Owner.
- D. Warranties, Product Bonds, Workmanship Bonds, and Maintenance Agreements: Refer to subsequent specification sections.
- E. Closeout Submittals: Refer to Section 01780, Closeout Submittals and to individual specification sections for closeout submittal requirements and project record documents.
- F. Warranty and Maintenance Manuals: Refer to Section 01780, Closeout Submittals and to individual specification sections for submittal of warranty information and Maintenance Manuals.
- G. Materials and Tools: Refer to individual specification sections for required quantities of spare parts, extra and overrun stock, maintenance tools and devices, keys, and similar physical units to be distributed.
- H. Other submittals specified within the Project Manual: Conform to the submittal requirements specified above.

1.13 PROJECT CONSULTANT'S REVIEW

- A. The Project Consultant will review and take appropriate action on shop drawings, product data, samples and other submittals required by the Contract Documents. Such review is only for general conformance with the information given in the Contract Documents.
- B. The Project Consultant's review will not include review of quantities, dimensions, weights or gages, fabrication processes, construction safety precautions which are the responsibility of the Contractor.
- C. The Project Consultant's review will be conducted with reasonable promptness consistent with sound professional practice and where possible, return the submittals to the Contractors within 14 days. Where submittal must be held for coordination, the Contractor will be so advised by the Project Consultant.
- D. The Project Consultant's review of a specific item does not indicate acceptance of an assembly of which the item is a component.
- E. The Project Consultant will review partial submissions of complex systems or assemblies when requested by the Contractor and pre-approved in advance by the Project Consultant.
- F. The Project Consultant will not review those submittals not approved by the Contractor.
- G. Review and comment by the Project Consultant will be limited to simple notations that can be easily communicated and understood on the reproducible drawings, product data or samples

submitted. The Project Consultant's review will not include lengthy or detailed explanations, clarifications, or design information.

- H. Submittals will be rejected in the event examination and review of such documents reveals that the Work does not comply with the Contract Documents, are unclear, or it is evident that the Contractor has not reviewed and approved the submitted data.
- I. The Project Consultant, after its review, will
 - 1. Affix its stamp and initials or signature indicating approval or the requirements for re-submittal or review of the submittal.
 - 2. Return submittals to the Contractor.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION



Document 01330a: Transmittal Form

To:
 (Project Consultant)

Submittal No.:	Date:
<input type="checkbox"/> Resubmittal	

Attn:
 Project No:
 Project Title:
 Facility Name:

(One Submittal item per form)

We hereby submit:

Qty	Reference Number	Title/Description/ Manufacturer	Spec Section Title, Paragraph/ Drawing Detail Reference

- | | |
|---|--|
| <input type="checkbox"/> Submitted for Review and Approval. | <input type="checkbox"/> Complies with contract requirements. |
| <input type="checkbox"/> Resubmitted for Review and Approval. | <input type="checkbox"/> Will be available to meet construction Schedule. |
| | <input type="checkbox"/> Reviewed, coordinated and approved by the General Contractor. |

Other remarks concerning submittal:

Contractor:
 Retain copy for Project Files

By: (Signature)

Contractor:

To:
 (Contractor)

Date Received: _____	Date Returned: _____
-----------------------------	-----------------------------

FROM: _____, Project Consultant

The referenced submittal has been/is:

- | | |
|--|---|
| <input type="checkbox"/> Approved | <input type="checkbox"/> Provide file copy with corrections identified. |
| <input type="checkbox"/> Approved as Noted | <input type="checkbox"/> Full Point by Point Comparative Data Required for Evaluation and Approval Process. |
| <input type="checkbox"/> Disapproved/Resubmit | <input type="checkbox"/> Other: |
| <input type="checkbox"/> Not Subject to Review | |
| <input type="checkbox"/> Incomplete/Resubmit | |

By: (Signature)

Project Consultant:

Distribution: Contractor Owner Retain Copy for Project File

SECTION 01350 SPECIAL PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hurricane/Storm Precautions.

1.02 HURRICANE/STORM PRECAUTIONS

- A. Preliminary preparations: Hurricane Season

1. Discuss hurricane procedures at Progress meetings.
 - c. Designate the Superintendent as the Contractor's point of contact for hurricane preparedness activities.
 - d. Coordinate with the Owner and cooperate with hurricane preparedness activities in both pre-, trans- and post-storm periods.
2. Rosters of Available Personnel:
 - a. Ensure Superintendent maintains a roster of names, addresses, and telephone numbers of:
 - 1) At least three laborers and two carpenters that can be reached in an emergency situation who could and would work around-the-clock, if necessary.
 - 2) Electricians, plumbers and other technicians necessary to secure the site before the storm and remobilize it afterwards.
 - b. Ensure Superintendent maintains a roster and key contacts for all subcontractors, suppliers, and manufacturers.
3. Ensure that Contractor's office on site is equipped with a hurricane tracking map. Watch and track all tropical storms and hurricanes on a daily basis.
4. Temporary Facilities:
 - a. Ensure proper anchoring of All jobsite office trailers, tool trailers and other temporary storage facilities with hurricane anchor straps. Maintain anchorage throughout contract term.
 - b. Ensure that adequate plywood or aluminum storm shutters are available for all openings (windows and doors).

- c. Plan for securing contents or relocating them to a safe location during storm periods. Ensure protection for project records and project record documents.
 - 5. Maintain clean site and work areas.
 - 6. Verify that the Builder's Risk policy is in effect and covers wind damage or storm damage.
 - 7. Make arrangements for and secure cleanup materials and tarps or plastic sheeting for protection of indoor equipment.
- B. Preparation 72 hours prior to Hurricane:
- 1. Check to see that all preliminary preparations have been made.
 - 2. Photograph entire project site. Ensure film and photographs are maintained in a safe location during and after the storm.
 - 3. Delay delivery of materials that cannot be adequately protected such as cabinets, light fixtures, appliances.
 - 4. Clean site of loose debris, tools and materials:
 - a. Broom clean entire project inside of building and outside.
 - b. Empty and secure all trash containers: remove trash from site.
 - c. Ensure that no part of the Owner's or adjacent properties will suffer damage from windblown debris originating on the project site.
 - 5. Protection of the Work:
 - a. Pour any slabs, columns or beams that are available and ready to be poured.
 - b. Secure all loose objects, both inside and outside.
 - c. Band all loose materials on the site with metal straps. Secure banded materials to floors and columns.
 - d. Make projects as wind and watertight as possible by covering all openings with plywood or shutters as appropriate to the level of finish of the Work.
 - e. Power down energized buildings prior to leaving the site before the storm.
 - f. Lower all cranes and free wheel all tower cranes.
 - 1. Tower Cranes: Verify requirements for additional shoring or bracing with engineers and provide if necessary to withstand anticipated wind pressures.

- g. Check all material hoists to insure that hoist platforms are on the ground and that all towers are securely in place.
- 6. Temporary Facilities:
 - a. Bring all jobsite files, computers, typewriters, calculators, levels, transits, and small tools into the main office or temporarily relocate them to a safe location.
 - b. Secure temporary buildings and shutter openings.
 - c. Power down energized buildings prior to leaving the site before the storm.
- 7. Ensure security and safety of the site prior to storm.
- 8. Ensure workers have personally prepared for the storm and are instructed to return as soon as possible after the storm is past.

C. Post-Storm Activities

- 1. Photograph project site immediately upon return.
- 2. Coordinate and cooperate with Owner and Project Consultant to assess damage.
- 3. Ensure immediate safe re-mobilization of site and workforce.
- 4. Ensure minimized impact on project schedule.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01370 SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 Section 01370- SCHEDULE OF VALUES

A. Precedence

- 1 - In case of disagreement between Section 01370 - SCHEDULE OF VALUES and THE COUNTY CONTRACT, THE COUNTY CONTRACT shall govern.

B. Related Sections

- 1 - DIVISION 01 - GENERAL REQUIREMENTS Section(s):
01290 PAYMENT PROCEDURES
01313 CONSTRUCTION SCHEDULING
MANAGEMENT SYSTEM

1.02 DESCRIPTION

- A. Includes requirements for preparation and submission of "SCHEDULE OF VALUES".
- B. Related Work:
1. Shop Drawings, Product Data and Samples
 2. Substitutions and Product Options
- C. Time Coordination: In coordination of initial submittals and other administrative start-up activities, submit Schedule of Values to the Owner and Consultant at earliest feasible date, but in no case later than seven (7) days before initial payment request is to be submitted.
- D. Provide support values given with data that will substantiate their correctness
- E. Use Schedule of Values in coordination with the Progress Schedules as a basis for the Contractor's Application for Payment.

1.03 FORM OF SUBMITTAL

- A. Submit an AIA Document G-703 "Continuation Sheet". 1983 Edition.
- B. Identify each line with the applicable number and title as listed in the Contract Documents.

1.04 PREPARING SCHEDULE OF VALUES

- A. Prepare Schedule of Values, in coordination with preparation of the Progress Schedules. Correlate line items with other administrative schedules and forms required for the Work, including progress schedule, payment request form, listing subcontractors, schedule of allowances, listing of products and principal suppliers and fabricators, and schedule of submittals.
- B. Provide breakdown of bid in sufficient detail to facilitate continued evaluation by the Owner of payment requests and progress reports. Breakdown principal separate contract amounts into several line items. Round off to nearest whole dollar, with total equal to the bid.
- C. Submit five (5) copies of Schedule of Values to the Owner and Consultant. Consultant will review and provide copies to Contractor and Owner.
- D. Listing: Arrange schedule with columns to indicate generic name of item; related Specifications Sections; subcontractor, supplier, manufacturer, or fabricator; change orders which have affected value; dollar value of item, and percentage of Contract Sum to nearest one-hundredth percent and adjust to total 100-percent.
- E. Mark-up of Cost:
 - 1. Show line items of indirect costs, and mark-ups on actual costs, only to extent such items will be individually listed in payment requests.
 - 2. Establish each item in Schedule of Values and in payment requests to be complete with total expenses and proportionate share of general overhead and profit margin.
 - 3. Major cost items, which are not directly cost of actual work-in-place, such as distinct temporary facilities, may be either

shown as line items in Schedule of Values or distributed as general overhead expense.

- F. Itemize separate line item cost for work required by each section of the Technical Specifications including GENERAL CONDITIONS of the Contract.
- G. Break down installed costs into:
 - 1. Cost of product, delivered and unloaded at Job Site with taxes paid. (List under Column F, G-703).
 - 2. Total installed cost, with overhead and profit. (List under Column C, G-703).
- H. For each line item that has an installed value of more than \$50,000.00, break down costs to list major products or operations under each item.
- I. Make sum of total costs of all items listed in Schedule equal to total bid.

1.05 SUBSCHEDULE OF UNIT MATERIAL VALUES

- A. Submit a sub-schedule of unit costs and quantities for:
 - 1. Products on which progress payments will be requested for products stored in strict conformance with the Contract Documents.
 - 2. Sub-Schedules: Where Work is separated into phases which require separately phase payments the Contractor shall provide sub-schedules of values correlated with each phase of payment.
- B. The form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.
- C. The unit quantity for bulk materials shall include an allowance for normal waste.
- D. The unit values for the materials shall be broken down into:

1. Cost of the material, delivered and unloaded at the Site, with taxes paid.

E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

1.06 REVIEW AND RESUBMITTAL

A. After review by the Owner, revise and re-submit Schedule of Values as required.

B. Re-submit revised Project Schedules in same manner.

C. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders affect the listing and when actual performance of Work involves necessary changes of substance to values previously listed.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01390 CONTROL OF WORK

PART 1 - GENERAL

1.01

- A. Precedence
1 - In case of disagreement between Section 01390 - CONTROL OF WORK and THE COUNTY CONTRACT, THE COUNTY CONTRACT shall govern.

- B. Related Sections
1 - THE COUNTY CONTRACT GENERAL CONDITIONS Section(s):

 Section 7 – SHOP DRAWINGS
2 - DIVISION 1 – GENERAL REQUIREMENTS
 Section 01313 - CONSTRUCTION SCHEDULING
 MANAGEMENT

1.02 AUTHORITY OF OWNER AND THE CONSULTANT

- A. The Consultant will decide any and all questions that may arise as to the quality and acceptability of materials furnished and the technical interpretation of the Contract Documents. The Owner will decide any and all questions that may arise as to the work performed, the rate of progress of the Work, the fulfillment of the Contract on the part of the Contractor and the rights of different Contractors on the Project. The Owner will determine the amount and quality of the several kinds of work performed and materials furnished which are to be paid for under the Contract.

1.03 CONFORMITY WITH DRAWINGS AND SPECIFICATIONS

- A. All work and all materials furnished shall be in reasonable close conformity with the lines, grades, grading sections, cross sections, dimensions, materials requirements, and testing requirements that are specified (including specified tolerances) in the Contract Documents.

- B. If the Consultant finds the materials furnished, or the finished product not within reasonably close conformity with the Contract Documents but that the portion of the Work affected will, in his/her opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to the COUNTY, he will submit written findings and advise the Owner of the recommendation that the affected work be accepted and remain in place. In this event, the Owner will document

its determination and recommend to the COUNTY a basis of acceptance that will provide for an adjustment in the Contract Sum for the affected portion of the Work. The Consultant's determination and the Owner's recommended Contract Sum adjustments will be based on good engineering judgment and such test or retests of the affected work as are, in their opinion, needed. Changes in the Contract Sum shall be covered by contract modifications as applicable.

- C. If the Consultant finds, and advises the Owner that the materials furnished, or the finished product are not in reasonably close conformity with the Contract Documents and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor in accordance with the Owner's written instructions.
- D. For the purpose of this Section, the term "reasonably close conformity" shall not be construed as waiving the Contractor's responsibility to complete the Work in accordance with the Contract Documents. The term shall not be construed as waiving either the Owner's or the Consultant's right to insist on strict compliance with the Contract Documents during the Contractor's prosecution of the Work, when, in the Owner's opinion, such compliance is essential to provide an acceptable finished portion of the Work.
- E. For the purpose of this Section, the term "reasonably close conformity" is also intended to provide the Owner and the Consultant with the authority to use good architectural and engineering, and construction management judgment in their determinations as to acceptance of Work that is not in strict conformity but will provide a finished product equal to or better than that intended by the requirements of the Contract Documents.

1.04 COORDINATION OF CONTRACT DOCUMENTS

- A. The Contract Documents and all referenced standards cited are essential parts of the Contract Requirements. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete Work. In case of discrepancy, figured dimensions, unless obviously incorrect, shall govern over scaled dimensions. Cited standards for materials or testing, and cited FAA Advisory Circulars and FDOT standards shall be considered as standard specifications.
- B. Any table, gradation, size, dimension, rate, mix, method, nomenclature, pay item number, basis of payment or method of measurement shown

on the written Contract Documents, will take precedence over any variance with the drawings.

- C. The Contractor shall not take advantage of any apparent error or omission in the various Contract Documents. In the event the Contractor discovers any apparent conflict, error or discrepancy, he shall immediately call upon the Owner for his/her interpretation and decision, and such decision shall be final.

1.05 CONSULTANT'S DRAWINGS

- A. The Drawings furnished by the Consultant consist of general drawings showing such details as are necessary to give a comprehensive idea of the construction contemplated. Roadway plans will show, in general, alignment, profile grades, typical cross sections and general cross sections. Structure plans, in general, will show in detail all dimensions of the Work contemplated.
- B. When the structure plans do not show dimensions in detail, they will show general features and such details as necessary to give a comprehensive idea of the design and construction of the structure.
- C. Not all conflicts are known within the Project area. Not all conflicts are shown on the Drawings. The Contractor is solely responsible for the location and protection of all equipment and facilities, which are to remain in service and in place during and after completion of all Project Work.

1.06 FIELD NOTES

- A. Adequate field notes and records shall be kept as layout work is accomplished. These field notes and records shall be available for review by the Owner and Consultant as the Work progresses and copies shall be furnished to the Owner at the time of completion of the Project or when requested. An inspection or checking of the Contractor's field notes or layout work by the Owner and the acceptance of all or any part thereof, shall not relieve the Contractor of his responsibility to achieve the lines, grades, and dimensions shown in the Drawings and Specifications.

1.07 PAYMENT

- A. The cost of all stakes and the cost of performing layout work as described above shall be included in the Contract Unit Prices or Lump Sum for the various items of Work to which it is incidental.

1.08 AUTOMATICALLY CONTROLLED EQUIPMENT

- A. Whenever batching or mixing plant equipment is required to be operated automatically under the Contract and a breakdown or malfunction of the automatic controls occurs, the equipment may be operated manually or by other methods for a period 48-hours following the breakdown or malfunction, provided this method of operations will produce results which conform to all other requirements of the Contract.

1.09 AUTHORITY AND DUTIES OF INSPECTORS

- A. Inspectors employed by the Owner shall be authorized to inspect all work done and all materials furnished. Such inspection may extend to all or any part of the Work and to the preparation, fabrication, or manufacture of the materials to be used. Inspectors are not authorized to revoke, alter or waive any provision of the Contract. Inspectors are not authorized to issue instructions contrary to the Contract Documents or to act as foreman for the Contractor.
- B. Inspectors employed by the COUNTY and the Consultant are authorized to notify the Contractor of any failure of the Work or materials to conform to the requirements of the Contract Documents and to reject such nonconforming materials in question until such issues can be referred to the Owner for decision.

1.10 INSPECTION OF THE WORK

- A. All materials and each part or detail of the Work shall be subject to inspection by the Owner or Consultant. The Owner or Consultant shall be allowed access to all parts of the Work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.
- A. If the Owner requests it, the Contractor, at any time before acceptance of the Work, shall remove or uncover such portions of the finished Work as may be directed. After examination, the Contractor shall restore said portions of the Work to the standard required by the Specifications.

Should the Work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the Work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

- C. Any Work done or materials used without supervision or inspection by the Owner may be ordered removed and replaced at the Contractor's expense unless Owner or CONSULTANT failed to inspect after having been given reasonable notice in writing that the Work was performed and ready for inspection.
- D. Should the Contract Work include relocation, adjustment, or any other modification to existing facilities, not the property of the COUNTY, authorized representatives of the COUNTY of such facilities shall be given the right to inspect such Work. Such inspection shall in no sense make any facility COUNTY a party to the Contract, and shall in no way interfere with the rights of the parties to this Contract. Inspection and/or approval of the Work or any portion thereof shall not relieve the Contractor of responsibility for faulty materials or workmanship.

1.11 REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK

- A. All Work which does not conform to the requirements of the Contract Documents will be considered unacceptable, unless otherwise determined acceptable by the Owner as provided in Item 1.03 CONFORMITY WITH DRAWINGS AND SPECIFICATIONS of this Section.
- B. Unacceptable Work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the Final Completion of the Work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of Article 26 of Section 07200 DEFECTIVE WORK.
- C. Work done contrary to the instructions of the Owner, work done beyond the lines shown on the Drawings or as given, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the Contract. Work so done may be ordered removed or replaced at the Contractor's expense

- D. Upon failure on the part of the Contractor to comply forthwith with any order of the Owner made under the provision of this Section, the Owner will have authority to cause unacceptable work to be remedied or removed and replaced and unauthorized work to be removed and to deduct the costs (incurred by the COUNTY) from any monies due or to become due the Contractor.

1.12 MAINTENANCE DURING CONSTRUCTION

- A. The Contractor shall maintain the Work during construction and until the Work is accepted by the Owner. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the Work is maintained in satisfactory condition at all times. All Work shall be protected during any delay between phases or sub-phases of construction required to complete the Work.

1.13 FAILURE TO MAINTAIN THE WORK

- A. Should the Contractor at any time fail to maintain the Work as provided in Item 1.12 MAINTENANCE DURING CONSTRUCTION of this Section, the Project Manager will notify the Contractor of such noncompliance. Such notification will specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the condition that exists.
- B. Should the Contractor fail to respond to the Project Manager's notification, the Project Manager may suspend any work necessary for the COUNTY to correct such unsatisfactory maintenance condition, depending on the condition that exists. Any maintenance costs incurred by the COUNTY shall be deducted from monies due to become due the Contractor.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01400 QUALITY CONTROL SERVICES

PART 1 GENERAL

1.1 The COUNTY CONTRACT and Section 01400 – QUALITY CONTROL SERVICES

- A. Precedence
 - 1. In case of disagreement between Section 01400 – QUALITY CONTROL SERVICES and THE COUNTY CONTRACT, THE COUNTY CONTRACT shall govern.

1.2 DESCRIPTION

- A. General: This Section specifies administrative and procedural requirements for quality control services.
 - 1. Quality control services include inspections and tests and related actions including reports, performed by the Independent Test Laboratory under contract to the County, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the Owner or the Consultant.
 - 2. Inspection and testing services are intended to assist the Owner and the Consultant in the determination of probable compliance of the Work with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Documents requirements.
- B. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
 - 1. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Documents requirements.
 - 2. Requirements for the Contractor to provide quality control services required by the Contract Documents, Owner, Consultant, and authorities having jurisdiction are not limited by provisions of this Section.

1.3 TESTING BY THE COUNTY

- A. The COUNTY will engage and pay for the services of an Independent Testing Laboratory to perform inspections and tests specified as the COUNTY'S responsibilities.
 - 1. Where the COUNTY has engaged a testing laboratory or other entity for testing and inspection of a part of the Work, and the Contractor is also required to engage an entity for the same related element, the Contractor shall not employ the entity engaged by the COUNTY, unless otherwise agreed in writing with the Owner.

1.4 CONTRACTOR RESPONSIBILITIES

- A. Contractor Responsibilities: The Contractor shall provide inspections, tests and similar quality control services, specified in individual Specification Sections and required by governing authorities, except where they are specifically indicated to be the COUNTY'S responsibility, or are provided by another identified entity; these services include those specified to be performed by an independent testing laboratory and not by the Contractor. Costs for these services are to be paid by the Contractor except testing specifically identified as being paid by the COUNTY.
1. The Contractor shall employ and pay an independent testing and inspection laboratory to perform specified quality control services.
 2. Retesting: The Contractor is responsible for retesting where results of required inspections, tests, or similar services prove unsatisfactory and do not indicate compliance with Contract Documents requirements, regardless of whether the original test was the Contractor's responsibility.
 - a. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.
 3. Associated Services: The Contractor shall cooperate with the laboratories performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. The Contractor shall notify the Owner sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to:
 - a. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
 - b. Taking adequate quantities of representative samples of materials that require testing or assisting the laboratories in taking samples.
 - c. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
 - d. Providing the testing laboratory with preliminary design mix proposed for use for materials mixes that require control by the testing agency.
 - e. Providing security and protection of samples and test equipment at the Project site.
- B. Duties of the Testing Laboratory: The independent testing laboratory engaged by the COUNTY to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections will cooperate with the Owner, Consultant and Contractor in performance of its duties, and provide qualified personnel to perform required inspections and tests.
1. The testing laboratory shall notify the Owner, Consultant and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. The testing laboratory is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
 3. The testing laboratory will not perform any duties of the Contractor.

- C. Coordination: The Contractor and each laboratory engaged to perform inspections, tests, and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition, the Contractor and each laboratory shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
1. The Contractor is responsible for scheduling times for inspections, tests taking samples, and similar activities.

1.5 SUBMITTALS

- A. The independent testing laboratory employed by the COUNTY shall submit original and one (1) copy of the certified written report to the Owner and copies in duplicate to the Consultant and Contractor of each inspection, test or similar service.
1. The independent testing laboratory shall submit additional copies of each written report directly to the governing authority, when the authority so directs.
 2. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:
 - a. Date of issue.
 - b. Project and title number.
 - c. Name, address and telephone number of testing agency.
 - d. Dates and locations of samples and tests or inspections.
 - e. Names of individuals making the inspection or test.
 - f. Designation of the Work and test method.
 - g. Identification of product and Specification Section.
 - h. Complete inspection or test data.
 - i. Test results and interpretations of test results.
 - j. Ambient conditions at the time of sample-taking and testing.
 - k. Comments or professional opinion as to whether inspected or tested Work complies with Contract Documents requirements.
 - l. Name and signature of laboratory inspector.
 - m. Recommendations on retesting.

1.6 QUALITY ASSURANCE

- A. Qualification of Testing Laboratory: The COUNTY will engage an inspection and testing laboratory which is prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specializes in the types of inspections and tests to be performed. The testing laboratory will be accredited by a recognized accreditation authority as outlined in ASTM Section 3. The independent inspection and testing laboratories by the Contractor shall be similarly qualified and be authorized by authorities having jurisdiction to operate in the State of Florida.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL

- A. The Contractor shall take corrective action necessary to comply with the Contract Documents as the Owner may direct. No change will be made in the contract price or in the Contract time as a result of authorizing a change in methods or equipment under this Section.

END OF SECTION

SECTION 01410 REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Description of Requirements
- B. Codes and Standards
- C. Governing Regulations and Authorities
- D. Submittals

1.02 RELATED SECTIONS

- A. Section 01420: References
- B. Section 01450: Quality Control

1.03 DESCRIPTION OF REQUIREMENTS

- A. General:
 - 1. This section specifies procedural and administrative requirements for compliance with governing regulations and codes and standards imposed upon the Work. These requirements include obtaining permits, licenses, inspections, releases and similar requirements associated with the regulations, codes and standards.
 - 2. The term "Regulations" is defined to include laws, statutes, ordinances, and lawful orders issued by governing authorities, as well as those rules, conventions and agreements within the construction industry which effectively controls the performance of the Work regardless of whether they are lawfully imposed by governing authority or not.
 - 3. Governing Authority: For requirements related to compliance with governing regulations, refer to:
 - a. Document BCF 170: Construction Contract
 - i. Section 007200: General Conditions

4. General Requirements: Provisions and requirements of the Contract, the General Conditions of the Contract, the Supplementary Conditions of the Contract, and other Division 1 specification sections apply to the entire Work defined by the Contract Documents. As such, there is no need to separately enumerate the application of those documents within the individual specification sections or the drawings.

1.04 DEFINITIONS

A. Basic Contract definitions are included in:

1. Document BCF 170: Construction Contract

- i. Section 007200: General Conditions

B. Certain terms used in the Contract Documents are defined in this Section. Definitions and explanations contained in this Section are not necessarily complete, but are general for the Work to the extent that they are not stated more explicitly in another document within the Contract Documents.

1. Indicated: refers to graphic representations, notes or schedules on the Drawings, or other Paragraphs or Schedules in Specifications, and similar requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used, it is to help locate the reference; no limitation on location is intended except as specifically noted.
2. Directed: Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the Project Consultant", "requested by the Project Consultant", and similar phrases. However, no implied meaning shall be interpreted to extend the Project Consultant's responsibility into the Contractor's area of construction supervision.
3. Approve: The term "approved," where used in conjunction with the Project Consultant's action on the Contractor's submittals, applications, and requests, is limited to the duties and responsibilities of the Project Consultant as stated in the Contract, General and Supplementary Conditions of the Contract or other Division 1 Specifications. Such approval shall not release the Contractor from responsibility to fulfill Contract requirements unless otherwise provided in the Contract Documents.
4. Furnish: The term "furnish" is used to mean "supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."
5. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."
6. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."

7. Project Site: is the space available to the Contractor for performance of construction activities, either exclusively or in conjunction with others performing other construction activities as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land upon which the Project is to be built.
8. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.05 CODES AND STANDARDS

- A. Except where earlier editions are specifically indicated, latest editions with current revisions and amendments of the following codes and standards are considered minimum requirements for materials, workmanship and safety where not covered elsewhere in these specifications.
- B. Codes and Standards: Obtain copies of the following regulations (unless otherwise indicated) and retain at the project site, available for reference by parties who have a reasonable need for such reference:
 1. Florida Building Code 5th Edition (2014)
 2. Florida Fire Preventions Code Fifth Edition Effective December 31, 2014
 3. Conflicting Requirements: In the case of conflicting requirements the more, or most, stringent shall apply.
 4. Online versions are acceptable if internet access is available at the site.
- C. Other Regulatory Agencies. Coordinate the Work with the following regulatory and permitting agencies as applicable, for installation permits and inspections:
 1. Department of Business and Professional Regulations (DBPR).
 - a. Elevators
 2. Department of Environmental Protection (DPEP) including the Regional Water Management Districts.
 - a. Water management and drainage.
 - b. Wells (Non-Potable Water).
 - c. Water treatment.
 - d. On site sewage disposal systems over ten thousand (10,000) gallons per day.
 - e. Protection of ground water.

- f. Biological Resources.
- 3. Department of Labor and Employment Security (DLES). Inspections for work place safety.
- 4. Department of State (DOS). Division of Historical Resources. For new construction, remodeling, or renovation projects involving a facility, building, or site fifty (50) years old or more and for discovered antiquities uncovered on site.
- 5. Department of Transportation (DOT). Off-site, state, city, and county access roads adjacent to property.
- 6. Department of Health and Rehabilitative Services (HRS).
 - a. On-site sewage disposal systems under ten thousand (10,000) gallons per day.
 - c. Bio-hazardous wastes.
 - d. Facilities intended to house birth to age three (3) children, including Teenage Parent Programs (TAP), shall meet HRS construction and licensing requirements.
- 7. Local Services:
 - a. The following local agencies will provide services or will have jurisdictional authority for permitting and inspection of the elements of the Work indicated:
 - 1. Fire protection: Pompano Beach Fire Rescue
 - 2. Police protection: Broward Sheriff's Office
 - 3. Necessary traffic control and safety devices: Pompano Beach Public Works
 - 4. Primary roads and emergency access: Pompano Beach Public Works
 - 5. Utilities and connection fees: Pompano Beach Utilities Department
 - 6. Historical resources: NA
 - 7. Trash Removal Franchise: Pompano Beach Public Works
 - 8. General Construction Permitting Outside Owner's Property Line: NA

1.06 GOVERNING REGULATIONS/AUTHORITIES

- A. Coordinate inspections and regulatory requirements of the agencies specified above under provisions of Section 01450, Quality Control.
- B. Pay fees and obtain permits as specified elsewhere in the Contract Documents.

- C. The organization of the Contract Documents are not intended to be an indication of jurisdictional or trade union agreements.

1.06 SUBMITTALS

- A. Licenses and Certificates: Submit copies of licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgements and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon the performance of the Work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01420

REFERENCES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawing Symbols
- B. Specification Format And Content Explanation
- C. Industry Standards
- D. Federal Government Agencies
- F. Submittals

1.02 RELATED SECTIONS

- A. Section 01410: Regulatory Requirements
- B. Section 01450: Quality Control

1.03 DRAWING SYMBOLS

- A. Except as otherwise indicated, graphic symbols used on the drawings are those symbols recognized in the construction industry for the purposes indicated. Where not otherwise noted, symbols are defined by "Architectural Graphic Standards", published by John Wiley & Sons, Inc., ninth edition or later.
- B. Mechanical and Electrical Drawings: Graphic symbols used on mechanical and electrical drawings are generally aligned with symbols recommended by ASHRAE and/or The National Electric Code (NEC). Where appropriate these symbols are supplemented by more specific symbols as recommended by other technical associations including ASME, ASPE, IEEE and other similar organizations.
- C. Refer instances of uncertainty to the Project Consultant for clarification prior to proceeding.

1.04 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 16-Division format and MASTERFORMAT numbering system.

B. Specification Conventions: This Specification uses certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and where the full context of the Contract Documents so indicates.
2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.
3. The words "shall be" shall be included by inference wherever a colon (:) is used within a sentence or phrase.
4. Abbreviations: Actual word abbreviations of a self-explanatory nature may be included within the Project Manual. Specific abbreviations have been established, principally for lengthy technical terminology and primarily in conjunction with coordination of specifications with notations on drawings and schedules. These abbreviations are frequently defined in the specification section at the first instance of use. Trade association names and titles of general standards are frequently abbreviated. Singular words will be interpreted as plural and plural word will be interpreted as singular where applicable and where full context of the Contract Documents so indicates. Refer instances of uncertainty to the Project Consultant for decision prior to proceeding.

C. Specification Content:

1. The techniques or methods of specifying to record requirements varies throughout the Project Manual. These methods may include: "prescriptive", "open generic-descriptive", "compliance with standards", "performance", "proprietary" or a combination of these. The method used for specifying one element of the Work has no bearing on requirements for another element of the Work.
2. Overlapping and Conflicting Requirements: Where compliance with two (2) or more industry standards or sets of requirements is specified, and overlapping of those different standards establishes different or conflicting minimums or levels of quality, the most stringent (which is generally recognized to also be the most costly) is intended and will be enforced--unless specifically detailed language written into the Contract Documents (not by way of reference to an industry standard) clearly indicates that a less stringent requirement is to be fulfilled. Refer apparently-equal-but-different requirements and other uncertainties to the Project Consultant for a decision prior to proceeding.
3. Contractor's Options: Except for overlapping or conflicting requirements where more than one set of requirements are specified for a particular unit of Work, option is intended to be Contractor's regardless of whether or not it is specifically intended as such.

C. Minimum Quality/Quantity: In every instance, quality level or quantity shown or specified is intended as minimum for the Work to be performed or provided. Except as otherwise

specifically indicated, actual Work may either comply exactly with that minimum (within reasonable specified tolerances), or may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are either minimums or maximums as not or as appropriate for the context of the requirements. Refer instances of uncertainty to the Project Consultant for decision prior to proceeding.

- D. Assignment of Specialists: The Specification requires that certain specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.
1. This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.
 2. Trades: Use of titles such as "carpentry" is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

1.05 INDUSTRY STANDARDS

- A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference. Individual Sections indicate which codes and standards the Contractor must keep available at the Project Site for reference.
- B. Publication Dates: Where the date of issue of a referenced standard is not specified, comply with the standard in effect as of date of Contract Documents.
1. Updated Standards: At the request of the Project Consultant, Contractor, or authority having jurisdiction, submit a Change Order proposal where an applicable code or standard has been revised and reissued after the date of the Contract Documents and before performance of Work affected. The Project Consultant and Owner will decide whether to issue a Change Order to proceed with the updated standard.
- C. Copies of Standards:
1. Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.
 2. Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.
 3. Although copies of standards needed for enforcement of requirements also may, be included as part of required submittals, the Project Consultant reserves the right to require the Contractor to submit additional copies as necessary for enforcement of requirements.

- D. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co. or other similar guides available from The Construction Specifications Institute, American Institute of Architects, etc.

1.07 SUBMITTALS

- A. Submit copies of standards where specified in respective specification sections.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01430 QUALITY ASSURANCE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fabricator's Qualifications
- B. Installer's Qualifications
- C. Manufacturer's Qualifications
- D. Manufacturer's Field Services
- E. Supplier Qualifications
- F. Testing And Inspection Agency Qualifications
- G. Broward County Licensure Requirements.

1.02 RELATED SECTIONS

- A. Section 01330: Submittal Procedures: Submission of Manufacturers' Instructions and Certificates and other documentation.

1.03 FABRICATOR'S QUALIFICATIONS

- A. A "Fabricator" is the Contractor or an entity engaged by the Contractor, either as an employee, subcontractor or sub-subcontractor to construct assemblies required for the Work from diverse, usually standardized manufactured parts or components either on the project site or in a shop setting.
- B. The term "experienced," when used with the term "fabricator" means:
 - 1. Routinely engaged in the regular fabrication of assemblies, sub-assemblies or components similar to those specified, and
 - 2. Being familiar with the requirements of Broward County, Florida.
- C. Fabricators, and the Contractor's workforce in general, are required to comply with the workforce composition requirements specified in the Contract and further specified below.

1.04 INSTALLER'S QUALIFICATIONS

- A. An "Installer" is the Contractor or an entity engaged by the Contractor, either as an employee, subcontractor, or sub-subcontractor for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

- B. The term "experienced," when used with the term "Installer" means:
 - 1. Having successfully completed Projects similar in size and scope to this Project.
 - 2. Being familiar with the precautions required.
 - 3. Having complied with the workforce composition and other requirements of Broward County, Florida and other jurisdictional authorities involved in the Work.
- C. Provide the levels of more extensive experience that may be specified within the respective specification sections contained in this Project Manual.
- D. Installers, and the Contractor's workforce in general, are required to comply with the workforce composition requirements specified in the Contract and further specified below.

1.05 MANUFACTURER'S QUALIFICATIONS

- A. A "Manufacturer" is a person or entity who produces materials or equipment for the Work, including that manufactured to a special design, but who does not perform labor at the site. Manufacturers are required to be experienced in the operations they are engaged to perform.
- B. The term "experienced," when used with the term "Manufacturer" means:
 - 1. Routinely in the regular manufacture of products, materials, components and assemblies similar to those specified, and
 - 2. Being familiar with the requirements of Broward County, Florida.
- C. Upon request, provide:
 - 1. Location of the Manufacturer including foreign or domestic status.
 - 2. Evidence of the time period in which the manufacturer has been producing the specified products, materials, components or assemblies without formulation, engineering, design or other production changes which would alter or modify their performance characteristics.
 - 3. Listings of the manufacturer's authorized franchised distributors, installers or applicators.
 - 4. Manufacturer's latest product performance criteria and test results.
 - 5. List of the manufacturer's technical services and their local availability.
 - 6. Other pertinent information to establish the capacity, capability and quality of the manufacturer as may be requested by the Project Consultant or Owner.
- D. The Owner reserves the right to require replacement of any manufacturer to whom reasonable objection is made by the Owner or Project Consultant.

1.06 MANUFACTURER'S FIELD SERVICES

- A. Submit qualifications of manufacturer's, suppliers, distributors or other entity's observers to Project Consultant and Owner thirty (30) days in advance of required observations. Observer subject to approval of Project Consultant and Owner and the Owner reserves the right to replace any observer for whom reasonable objection is made.
- B. When specified in individual specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, or other conditions as applicable, and to initiate instructions when necessary.
- C. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Submit report in duplicate within fifteen (15) days of observation to Owner for review.

1.07 SUPPLIER QUALIFICATIONS

- A. A "Supplier" is a person or entity who supplies materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the site. Suppliers are required to be experienced in the operations they are engaged to perform.
- B. The term "experienced," when used with the term "Supplier" means:
 - 1. Having supplied products or materials similar in size and scope to the Work specified herein.
 - 2. Having been in the regular business of supplying similar products and materials, and
 - 3. Being familiar with the requirements of Broward County, Florida.

1.08 TESTING AND INSPECTION AGENCY QUALIFICATIONS

- A. A "testing laboratory" or "Inspection Agency" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.
- B. Testing and Inspection Agencies may be hired, paid for and utilized by the Contractor for the Contractor's use at no additional expense to the Owner except as otherwise provided in the Contract Documents.
- C. Such testing and inspection agencies: meet the following qualifications:
 - 1. Laboratory: Authorized to operate in State in which Project is located.
 - 2. Laboratory Staff: Maintain a full time registered Engineer and the necessary specialists on staff to review services.
 - 3. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.09 BROWARD COUNTY LICENSURE REQUIREMENTS

A. Broward County requires the utilization of a workforce which holds State of Florida Certification or a certificate of competency obtained through a proctored examination in Broward County for the following crafts or trades. Ensure compliance with the Broward County licensure requirements if the listed crafts or trades (as mandated by Chapter 489 of the Florida Statutes and Broward County Ordinance 90-45 respectively) are required for the execution of the Work:

1. Liquefied Petroleum Gas (LPG) Contractors:
 - a. General LPG Contractors
 - b. Service and Installation LPG Contractors

2. Plumbing and Specialty Plumbing Contractors:
 - a. Master Plumber
 - b. Specialty Plumbing Contractors:
 - 1) Lawn Sprinkler Plumber
 - 2) Master Natural Gas Fitter
 - 3) Solar Heat Installer
 - c. Journeyman Plumber
 - d. Journeyman Natural Gas Fitter: Specialty Journeyman Plumber

3. Electrical and Specialty Electrical Contractors:
 - a. Master Electrician
 - b. Specialty Electricians:
 - 1) Burglar Alarm Electrician
 - 2) Central Community TV and Radio Specialty Contractor
 - 3) Electrical Sign Master Electrician
 - 4) Fire Alarm Electrician
 - 5) Lightning Protection Systems Contractor
 - 6) Low Voltage Electrician
 - 7) Communications
 - c. Journeyman Electrician
 - d. Electrical Sign Journeyman
 - e. Maintenance Electrician Journeyman

4. Mechanical and Specialty Mechanical Contractors:
 - a. Sheet Metal Contractor
 - b. Class A Air Conditioning Contractor
 - c. Mechanical Contractor
 - d. Transport Assembly Contractor
 - e. Insulation Contractor
 - f. Central Vacuum System Contractor
 - g. Pneumatic Control Contractor
 - h. Specialty Mechanical Technicians
 - i. Specialty Air Conditioning Technicians Class "C"
 - j. Specialty Air Conditioning Technicians Class "D":
 - 1) Class "A" Refrigeration Technician
 - 2) Class "B" Refrigeration Technician
 - 3) Warm Air Heating Technician
 - 4) Insulation Contractor
 - 5) Mechanical Maintenance Technician
 - k. Mechanical Journeyman:
 - 1) Insulation Journeyman

- 2) Journeyman Mechanical Technician
- 3) Sheet Metal Journeyman
- 5. Engineered Construction Contractors:
 - a. General Engineered Construction Builder
 - b. Special Engineered Construction Categories
 - c. Specialty Engineered Utility and Drainage Builders:
 - 1) Primary Pipelines (Water, Sewer, Drainage) - Class "A"
 - 2) Secondary Pipelines (Water, Sewer, Drainage incidental to parking lots) - Class "B"
 - 3) Plant Construction (Water Treatment, sewage treatment, industrial complexes, pump and lift stations, incinerators) - Class "C"
 - 4) Fuel Transmission and Distribution Lines - Class "D"
 - 5) Underground and Aerial Utility Transmission and Distribution Lines - Class "E"
 - 6) Feeder Distribution Interface (FDI Telephone Boxes) Installer - Class "F"
 - 7) Cable Television - Class "G"
 - 8) Jack and Bore Installer - Class "H"
 - 9) Limited to Irrigation Systems in the Public Right of Way
 - d. Specialty Engineered Structural Builders:
 - 1) Heavy Marine (Harbor facilities, Docks, Shipyards, Bulkheads, Retaining Walls, Seawalls, Dams, Locks) - Class "A"
 - 2) Bridges, Overpasses, Underpasses - Class "B"
 - 3) Tunnels - Class "C"
 - 4) Light Marine (Seawalls, Retaining Walls, Davits, Boat Lifts, Small Docks) - Class "D"
 - 5) Pile Driving - Class "E"
 - e. Specialty Engineered Paving Builders:
 - 1) Major Roads (Asphalt and Concrete Paving for Interstate, Primary, Secondary and Arterial Roadways and Airports and Work Incidental Thereto) - Class "A"
 - 2) Minor Roads - (Asphalt and Concrete Paving for Subdivision Facilities and Work Incidental Thereto) - Class "B"
 - 3) Concrete Driveways, Curbs, Gutters, and Sidewalks - Class "C"
 - 4) Sealcoating - Class "D"
 - 5) Surfacing (Tennis Courts, bikepaths, driveways, parking lots, with drainage incidental thereto being limited to soakage pits and drywells) - Class "E"
 - 6) Striping, Marking, and Signage of Major and Minor Roadways to include pavements - Class "F"
 - f. Specialty Engineered Earthwork Builders:
 - 1) Excavating (canals, lakes, levees) - Class "A"
 - 2) Clearing and Grading - Class "B"
 - 3) Dredging (Canals, lakes and waterways) - Class "C"
- 6. General and Specialty Building Contractors:
 - a. General Building - Class "A" - Unlimited
 - b. General Building - Class "B" - Commercial
 - c. General Building - Class "C" - Residential
 - d. Limited Specialty Building Categories:
 - 1) Acoustical Ceilings Category - Class "A"
 - 2) Awning Erection Category - Class "AE"
 - 3) Cabinet Installation Category - Class "C"
 - 4) Concrete Placing and Finishing Category - Class "CP"
 - 5) Demolition Category (Nonexplosive) - Class "A"
 - 6) Down Spouts and Gutters: Under Miscellaneous metals or roofing.

- 7) Drywall and Lathing Category - Class "DL"
- 8) Elevator Installation and Maintenance Category - Class "E"
- 9) Fence Erection Category - Class "F"
- 10) Finish Carpentry Category - Class "FC"
- 11) Flooring Category - Class "FL"
- 12) Glazing Category - Class "G"
- 13) Guniting Category - Class "GU"
- 14) Insulation Category - Class "I"
- 15) Masonry Category - Class "M"
- 16) Miscellaneous Metals Erection Category - Class "MM"
- 17) Painting (Interior and Exterior) Category - Class "P"
- 18) Painting Unlimited Category - Class "PU"
- 19) Plastering and Stucco Category - Class "PS"
- 20) Roof Decks Category - Class "RD"
- 21) Roof Painting and Cleaning Category - Class "RP"
- 22) Roofing Category - Class "R"
- 23) Rough Carpentry and Framework Category - Class "RC"
- 24) Sandblasting Category - Class "S"
- 25) Screen Enclosures Category - Class "SC"
- 26) Sign Erection Category - Class "SE"
- 27) Steel Reinforcing and Iron Category - Class "SR"
- 28) Structural Steel Category - Class "SS"
- 29) Swimming Pool Construction Category - Class "PC"
- 30) Swimming Pool Maintenance Category - Class "PM"
- 31) Terrazzo Category - Class "T"
- 32) Tile and Marble Category - Class "TM"
- 33) Waterproofing Category - Class "W"

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01450 QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Contractor's Quality Control
- B. Field Samples and Mock-Up Requirements
- C. Plant Inspections and Source Quality Control
- D. Inspection And Testing Laboratory Services
- E. Threshold Inspector
- F. Inspections

1.02 RELATED DOCUMENTS

- A. Document BCF 170: Inspections, testing, and approvals required by public authorities.
 - 1. Section 007200: General Conditions: Inspections, testing, and approvals required by public authorities.
- B. Section 01330: Submittal Procedures.
- C. Section 01710: Examination
- D. Section 01720: Preparation
- E. Section 01730: Execution
- F. Section 01750: Starting and Adjusting, and Section 23 05 93: Testing, Adjusting and Balancing for HVAC.
- G. Section 01770: Closeout Procedures: Substantial Completion and Acceptance Inspections.
- H. Individual Specification Sections: Quality control measures, inspections and tests required, and standards for testing.

1.03 REFERENCES

- A. Florida Building Code

1.04 CONTRACTOR'S QUALITY CONTROL

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence except where those instructions are superceded by more exacting or stringent requirements in the Contract Documents.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Project Consultant before proceeding.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship of specified quality.
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.05 FIELD SAMPLES AND MOCK-UP REQUIREMENTS

- A. Field Samples and Mock-Ups:
 - 1. Erect at the Project site at location acceptable to the Owner and Project Consultant.
 - 2. Construct each sample or mock-up complete, including all work of all trades required in finishing the Work.
- B. Provide field samples and mock-ups identical with final condition the proposed materials or products for the Work.
 - 1. Include "range" of samples (not less than 3) where unavoidable variations must be expected, and describe or identify variations between units of each set.
 - 2. Provide full set of optional field samples where Project Consultant's selection is required. Prepare samples to match Project Consultant's sample where so indicated.
- C. Include identification on each field sample or mock-up, with full Project information as required in Section 01330, Submittal Procedures.
- D. Provide the number of field samples and mock-ups as specified in individual specification Sections.
- E. Color selections for interior materials will not occur until the Project Consultant has approved samples of all interior finish items. No extension of time or substitution of materials will be granted as a result of the Contractor's failure to provide the Project Consultant with timely color samples of interior finish materials.

- F. Reviewed field samples and mock-ups which may be used in the Work are indicated in individual specification Sections and must be in undamaged condition when incorporated into the Work.

1.06 PLANT INSPECTIONS AND SOURCE QUALITY CONTROL

- A. The Project Consultant, and other personnel authorized by the Owner, shall at all times have access to the Work whenever it is in preparation or progress and wherever located.
- B. Provide safe facilities for such access so the Project Consultant and the Project Manager may perform their functions under the Contract.
- C. Ensure that off-site work locations (including factories, shops, warehouses and other structures which might be used for the manufacture, fabrication, assembly and storage of any element which will be incorporated into the Work) conforms the quality standards specified herein.
- D. Ensure that all off-site work is performed to the standards specified in this Project Manual for the respective elements of the Work.

1.07 INSPECTION AND TESTING LABORATORY SERVICES

- A. Owner will appoint, employ, and pay for services of an independent firm to perform inspection and testing.
- B. The independent firm will perform inspections, tests, and other services specified in individual specification Sections and as required by the Owner.
- C. Reports will be submitted by the independent firm to the Owner, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- D. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.
 - 1. Notify Owner independent firm 24 hours prior to expected time for operations requiring services.
 - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- E. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Owner. Payment for retesting will be charged to the Contractor by deducting inspection or testing charges from the Contract Sum/Price.

1.08 INSPECTIONS

A. Municipal, Broward County, And Other Jurisdictions

1. The work falls under the jurisdiction of the respective municipality, Broward County, Florida, Federal or other special district within which the Work is located. Generally, these areas of Work are governed by the Florida Building Code, latest Broward Edition, and other administrative requirements established by the jurisdictional agency.
2. The Contractor is responsible for procuring and paying for all permits required by respective jurisdictional authorities for Work.
3. Coordinate with respective jurisdictional agencies to verify their requirements and procedures for requesting and conducting inspections of the Work.

C. Inspection Procedures:

1. On-Site Inspections:

- a. Requests for Inspection: For on-site inspections (for work with-in the Owner's property line), notify the owner a minimum of **24 hours prior** to the time of the requested inspection. Inspections requested which fall on weekends or holidays observed by the Owner will be scheduled for the next business day except for exceptional circumstances approved by the Owner in advance. Provide a simultaneous notification to the Project Consultant that the Request for Inspection has been made. Coordinate and make arrangements for an Independent Testing Laboratory or other testing agency if one is required to be present at or participate in the inspection.
- b. Cooperate with and facilitate the inspection by providing incidental labor and facilities:
 - 1) To provide access to Work to be inspected.
 - 2) To obtain and handle samples at the site or at source of Products to be inspected or tested.
 - 3) To facilitate tests and inspections.
 - 4) To provide storage and curing of test samples.
 - 5) Maintaining complete set of submittals on site as specified in Section 01330, Submittal Procedures, and having them available for the inspector's use.

2. Off-Site Inspections:

- a. Requests for Inspection: Request inspection from the respective jurisdictional agency according to that agency's standard request procedures. Notify the inspector and the Project Consultant a minimum of **24 hours prior** to the time of the requested inspection. Coordinate and make arrangements for an Independent Testing Laboratory or other testing agency if one is required to be present at or participate in the inspection.

- b. Inspections will be conducted by the inspector representing the respective jurisdictional agency in the presence of the inspector, and the Project Consultant.
 - c. Cooperate with and facilitate the jurisdictional agency's inspection by providing incidental labor and facilities:
 - 1) To provide access to Work to be inspected.
 - 2) To obtain and handle samples at the site or at source of Products to be inspected or tested.
 - 3) To facilitate tests and inspections.
 - 4) To provide storage and curing of test samples.
 - d. Provide Inspection Report as specified below.
3. Non-Conforming Work
- a. Re-execute or correct Work identified during inspections as deficient.
 - b. Upon completion of re-executed or corrected Work, request re-inspection following procedures specified above.
- D. Inspection Reports:
- 1. After each inspection promptly submit three copies of inspection report to Project Consultant.
 - 2. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name and affiliation of inspector (Broward County, etc.).
 - d. Date and time of inspection.
 - e. Weather conditions and temperature at the time of inspection.
 - f. Identification of product and relative specification sections.
 - g. Location in the Project.
 - h. Type of inspection.
 - i. Results of tests,
 - j. Conformance with Contract Documents.
 - 3. When requested by Project Consultant, provide interpretation of inspection results.
- E. Limits On Inspector's Authority:
- 1. Local Building Department and jurisdictional agency inspectors may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Jurisdictional agency inspectors may not accept any portion of the Work.

3. Jurisdictional agency inspectors may not assume any duties of Contractor or the Project Consultant.

F. Schedule Of Mandatory Inspections:

1. This schedule indicates mandatory inspections required, as applicable, to every project:
 - a. **Soil Compaction:** Special inspections and related testing. Schedule inspections for all lifts of entire building pad.
 - b. **Footings and Foundations** (Including footings, pile caps and grade beams): Inspection prior to pouring concrete and after excavations, placement of fill and compaction, form erection, and placement of reinforcing steel placement and prior to pouring concrete.
 - c. **Slabs on Grade:** Inspection prior to pouring concrete and after excavations, placement of fill and compaction, form erection, steel reinforcing bar placement, wire mesh placement, and vapor barrier installation.
 - d. **Concrete Columns:** Inspection prior to erection of forms and pouring of concrete and after placement of reinforcing steel.
 - e. **Concrete Unit Masonry:** Inspection after each successive pour after placement of reinforcement and prior to pouring of the grout.
 - f. **Concrete Beams and Tie Beams:** Inspection prior to pouring concrete and after erection of forms, placement of reinforcing steel, bracing, and shoring.
 - g. **Structural Steel:** Inspection after erection of steel framing members, permanent and temporary bracing, steel floor joists, steel roof joists or trusses, and anchors/welds.
 - h. **Roof Trusses:** Inspection after erection of truss members, permanent and temporary bracing, roof sheathing and bottom chord furring members and anchors/welds.
 - i. **Roof Deck or Sheathing:** Inspection after placement and attachment of panels or planking and prior to application of base or anchor sheets of roofing system.
 - j. **Roofing Dry-In:** Prior to application of membrane plies or other elements of finish roofing system.
 - k. **Roofing:** At completion of roofing installation with all flashing systems and roof accessories, roofing aggregate, roof coatings, walkways and other related items are installed.
 - l. **Above Ceilings:** Inspection after framing, support system and/or ceiling grid and prior to the application of ceiling finish materials or acoustic lay-in panel.
 - m. **Framing:** Inspection prior to application of gypsum wall board, tile backer boards, metal lath, or other interior finish systems and after:

- 1) Installation of all structural elements including: furring, firestops, nailers, anchors, and bracing, and
 - 2) Completion of inspections for rough-in electrical, plumbing and HVAC systems. Refer to mandatory inspections for each of these respective systems.
- n. **Insulation:**
- 1) Interiors: Inspection prior to installation of gypsum wallboard or other wall/partition systems.
 - 2) Exteriors: Inspection prior to application of finish systems.
- o. **Lathing:** Inspection prior to application of plaster, stucco or other coatings, and after installation of lath and all accessory items (plaster stops, expansion and corner beads, etc).
- p. **Plaster Base:** Inspection prior to application of plaster basecoat and after installation of plaster base (including gypsum board, wire lath, and masonry type bases) and all associated accessories including corner beads, expansion joints, strip reinforcing, and nailers for molding, trim and other items.
- q. **Gypsum Wallboard Systems:**
1. Screw inspection: prior to application of joint reinforcement and joint compounds.
 2. Installation inspection: after application of joint reinforcement and joint compounds, completion of sanding and preparation for finish material application or painting.
- r. **Curtain Wall:** Inspection at each floor level prior to concealing curtain wall attachments to structural substrate..
- s. **Store Front:** Inspection prior to concealing store front attachments to structural substrate.
- t. **Windows and Glass Doors:** Inspection prior to concealing window and door attachments to structural substrate.
- u. **Ceramic and Quarry Tile Installation:** Upon completion of installation of tile.
- v. **Hardware:** Upon completion of installation hardware.
- 1) **Plumbing:**
 - a) Temporary services.
 - b) Underground: To be made after trenches or ditches are excavated, piping installed, and before any backfill is put in place.

- c) Rough: Inspection at completion of ground work and at completion of rough plumbing for each floor.
- d) Trim: Inspection at completion of fixture installation.
- e) Sprinkler: Testing and inspection at completion of sprinkler plumbing.
- f) Plumbing System Disinfection

2) **HVAC Systems:**

- a) Underground: To be made after trenches or ditches are excavated, piping installed, and before any backfill is put in place.
- b) Piping:
- c) Chiller-AHU:
- d) Insulation:
- e) Duct Work:
- f) Controls:

z. **Electrical:**

- 1) Underground: To be made after trenches or ditches are excavated, piping installed, and before any backfill is put in place.
- 2) Temporary Electrical Service:
- 3) Duct Bank
- 4) Slab
- 5) Rough
- 6) Trim

bb. Irrigation System Tests and Inspections

cc. Substantial Completion Inspection

dd. Final Completion Inspection

- 2. Additional inspections may be required by the respective technical specifications or as determined by the owner or jurisdictional inspector. The Contractor will be notified in advance of any additional inspections required.

PART 2 PRODUCTS

Kitchen Renovation
1700 Blount Road, Pompano Beach FL

North Homeless Assistance Center
Quality Control

Not Used

PART 3 EXECUTION

3.01 REPAIR AND PROTECTION

- A. Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."
- B. Protect construction exposed by or for quality control service activities, and protect repaired construction.
- C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.
- D. Additional services, included but not limited to A/E services, which are necessary and or required due to repairs or inspection is the responsibility of the General Contractor.

END OF SECTION

SECTION 01510 TEMPORARY UTILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Water Service And Distribution.
- B. Temporary Electric Power And Light.
- C. Telephone Service.
- D. Storm And Sanitary Sewer.
- E. Temporary Heat.
- F. Temporary Ventilation.
- G. Dewatering Facilities and Drains

1.02 RELATED DOCUMENTS

- A. Document BCF 170: Agreement Form
 - 1. Section 007200: General Conditions
- B. Section 01520: Construction Facilities

1.03 SUBMITTALS

- A. Temporary Utilities: Submit reports of tests, inspections, meter readings and similar procedures performed on temporary utilities.

1.04 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations if authorities having jurisdiction, including but not limited to:
 - 1. Florida Building Code 5th Edition (2014)
 - 2. Health and safety regulations.
 - 3. Utility company requirements.
 - 4. Police, Fire Department and Rescue Squad requirements.

5. Environmental protection regulations.
- B. Comply with:
1. Comply with NFPA Code 241, "Building Construction and Demolition Operations".
 2. ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition".
 3. NECA Electrical Design Library "Temporary Electrical Facilities."
- C. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.
- D. Electrical Service:
1. Comply with NEMA, NECA and UL standards and regulations for temporary electric service.
 2. Install service in compliance with National Electric Code (NFPA 70).
- E. Inspections: Arrange for inspection and testing with authorities having jurisdiction under provisions of Section 014450, Quality Control.
- F. Obtain required certifications and permits.

1.05 CONDITIONS OF USE

Keep temporary services and facilities clean and neat in appearance.

- B. Operate in a safe and efficient manner.
- C. Take necessary fire prevention measures.
- D. Do not overload facilities, or permit them to interfere with progress.
- E. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Provide new materials; if acceptable to the Project Consultant, undamaged previously used materials in serviceable condition may be used.
- B. Provide materials suitable for the use intended.
- C. Water: Provide potable water approved by local health authorities.

2.02 EQUIPMENT

- A. Provide new equipment; if acceptable to the Project Consultant and Owner.
 - 1. Undamaged, previously used equipment in serviceable condition may be used.
 - 2. Provide equipment suitable for use intended.
- B. Electrical Outlets:
 - 1. Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets.
 - 2. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.
- C. Electrical Power Cords:
 - 1. Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic.
 - 2. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.
- D. Lamps and Light Fixtures:
 - 1. Provide general service incandescent lamps of wattage required for adequate illumination.
 - 2. Provide guard cages or tempered glass enclosures, where exposed to breakage.
 - 3. Provide exterior fixtures where exposed to moisture.
- E. Heating Units: Provide temporary heating units, as required to maintain proper environmental conditions for the work. Provide units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Use qualified personnel for installation of temporary utilities and conform to the workforce composition and supervision requirements specified elsewhere in the Contract Documents.
- B. Locate temporary utilities where they will serve the Project adequately and result in minimum interference with performance of the Work or existing .
- C. Provide each temporary utility ready for use when needed to avoid delay.
- D. Maintain and modify as required.

- E. Do not remove until temporary utilities are no longer needed, or are replaced by authorized use of completed permanent utility.

3.02 TEMPORARY UTILITY INSTALLATION

A. General Requirements:

1. Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the company's recommendations.
 2. Arrange with the company and Project Consultant for a time when service can be interrupted, where necessary, to make connections for temporary services. The Project Consultant and the Owner will coordinate service interruptions with the occupants of existing facilities.
 3. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
 4. Coordinate with Project Consultant and Owner to obtain easements to bring temporary utilities to the site, where the Owner's easements cannot be used for that purpose.
- . Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Project Consultant, and will not be accepted as a basis of claims for a Change Order.

B. Water Service:

1. Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.
2. Sterilization: Sterilize temporary water piping prior to use.

C. Temporary Electric Power Service:

1. Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload protected disconnects, automatic ground-fault interrupters and main distribution switch gear.
2. Temporary Power Distribution System: Install wiring overhead, and rise vertically where least exposed to damage.

D. Temporary Lighting:

1. Whenever overhead floor or roof deck has been installed, provide temporary lighting with local switching.

2. Install and operate temporary lighting that will fulfill security and protection requirements, without operating the entire system, and will provide adequate illumination for construction operations and traffic conditions.
 - a. Provide and maintain incandescent or other lighting for construction operations to achieve a minimum lighting level of 2 watt/sq ft.
 - b. Provide and maintain 1 watt/sq ft lighting to exterior staging and storage areas after dark for security purposes.
 - c. Provide and maintain 0.25 watt/sq ft H.I.D. lighting to interior work areas after dark for security purposes.
3. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
4. Maintain lighting and provide routine repairs.
5. Permanent building lighting may not be utilized during construction.
6. Install exterior yard and sign lights so that signs are visible when Work is being performed.

E. Temporary Telephones:

1. Temporary Cellular Telephone Service: If regular telephone lines can not be provided or regular temporary telephone service must be curtailed or interrupted for longer than 2 days, provide temporary cellular service for the use of the Contractor, his employees, the Owner and Project Consultant:

F. Sewers and Drainage:

1. If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully.
2. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds and similar facilities if allowed by the Project Consultant, Owner or other municipal or county jurisdictional authorities. Coordinate requirements with Owner.
3. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off the site in a lawful manner.
4. Filter out excessive amounts of soil, construction debris, chemicals, oils and similar contaminants that might clog sewers or pollute waterways before discharge.
5. Connect temporary sewers to the municipal system as directed by the sewer department officials.
6. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. Following heavy use, restore normal conditions promptly.

7. Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.
8. Do not allow pollution or contamination of the site, adjacent properties or waterways.

G. Temporary Heat:

1. Provide temporary heat required by construction activities, for curing or drying of completed installations or protection of installed construction from adverse effects of low temperatures or high humidity.
2. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Ensure safety from fire hazard.
3. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.
4. Heating Facilities: Except where use of the permanent system is authorized, provide vented self-contained LP gas or fuel oil heaters with individual space thermostatic control.
5. Use of gasoline-burning space heaters, open flame, or salamander type heating units is prohibited.

H. Temporary Ventilation:

1. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
2. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.
3. Do not expose students, faculty, or staff of school facility to dust, fumes, vapors, gasses, or noxious odors. Limit construction operations that produce dust, fumes, vapors, gasses, and noxious odors to times when adjacent Owner occupied spaces are vacant from the time of generation to the time of dissipation.

I. Dewatering Facilities and Drains:

1. For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division-2 Sections. Where feasible, utilize the same facilities.
2. Maintain the site, excavations and construction free of water.

3.03 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary utilities. Limit availability of temporary utilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain temporary utilities in good operating condition until removal. Protect from damage by heat, humidity, and similar elements including brief periods of unexpected cold conditions.
 - 1. Maintain operation of temporary, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour day basis where required to achieve indicated results and to avoid possibility of damage.
 - 2. Protection: Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Termination and Removal:
 - 1. Unless the Project Consultant requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion.
 - 2. Complete and restore permanent construction that may have been delayed because of interference with the temporary facility.
 - 3. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
- D. Prior to Substantial Completion, clean and renovate permanent facilities that have been used during the construction period.

END OF SECTION

SECTION 01520 CONSTRUCTION FACILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Field Offices and Sheds
- B. First Aid
- C. Sanitary Facilities

1.02 RELATED DOCUMENTS

- A. Section 01510: Temporary Utilities

1.03 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations if authorities having jurisdiction, including but not limited to:
 - 1. Florida Building Code 5th Edition (2014).
 - 2. Health and safety regulations.
 - 3. Police, Fire Department and Rescue Squad requirements.
 - 4. Environmental protection regulations.
- B. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.
- C. Inspections: Arrange for inspection and testing of temporary facilities by authorities having jurisdiction under provisions of Section 01450, Quality Control.

1.04 CONDITIONS OF USE

- Keep temporary services and facilities clean and neat in appearance.
- B. Operate in a safe and efficient manner.
- C. Take necessary fire prevention measures.

- D. Do not overload facilities, or permit them to interfere with progress.
- E. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

1.05 USE OF FACILITIES

- A. Permanent and/or existing facilities: Do not use for field offices or for storage.

PART 2 PRODUCTS

2.01 TEMPORARY BUILDINGS

- A. Construction:
 - 1. Portable or mobile buildings, or buildings constructed with floors raised above ground, securely fixed to foundations, with steps and landings at entrance doors.
 - 2. Construction: Structurally sound, secure, weathertight enclosures for office and storage spaces. Maintain during progress of Work; remove at completion of Work.
 - 3. Temperature Transmission Resistance of Floors, Walls, and Ceilings: Compatible with occupancy and storage requirements.
 - 4. Exterior Materials: Weather resistant, finished in one color acceptable to Owner.
 - 5. Interior Materials in Offices: Sheet type materials for walls and ceilings, pre-finished or painted; resilient floors and bases.
 - 6. Lighting for Offices: 50 ft-C (538 lx) at desk-top height, exterior lighting at entrance doors.
 - 7. Fire Extinguishers: Appropriate type fire extinguisher at each office and each storage area as specified below.
 - 8. Interior Materials in Storage Sheds: As required to provide specified conditions for storage of products.
 - 9. Provide incombustible construction for offices, shops and sheds located within the construction area, or within 30 feet of building lines. Comply with requirements of NFPA 241.
 - 10. Security Enclosure and Lockup: Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.

B. Environmental Control:

1. Heating, Cooling, and Ventilating for Offices: Automatic equipment to maintain 68 degrees F (20 degrees C) heating and 76 degrees F (23 degrees C) cooling.
2. Storage Spaces: Provide heating, cooling and ventilation as needed to maintain products in accordance with Contract Documents; adequate lighting for maintenance and inspection of products.

C. Contractor Office And Facilities

1. Size: For Contractor's needs and to provide space for project meetings.
2. Telephone: As specified in Section 01510, Temporary Utilities.
3. Furnishings in Meeting Area: Conference table and chairs to seat at least eight persons; racks and files for Contract Documents, submittals, and Project Record Documents.
4. Other Furnishings: Contractor's option.
5. Equipment:
 1. 15 adjustable band protective helmets for visitors.
 2. One 10 inch outdoor weather thermometer
 3. Other office related equipment at Contractor's option.

E. Sanitary facilities: include temporary toilets, wash facilities and drinking water fixtures. Comply with regulations and health codes for the type, number, location, operation and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs after coordinating location with Owner and Project Consultant.

1. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
2. Provide toilet tissue, paper towels, paper cups and similar disposable materials for each facility, including toilet facilities provided in temporary office trailers. Provide covered waste containers for used material.
3. Existing Toilets: Use of the Owner's existing toilet or new toilet facilities: is permitted.

F. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy

and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.

- G. Protective Equipment: Provide safety showers, eye-wash fountains and similar facilities for convenience, safety and sanitation of personnel.
- H. Drinking Water Facilities: Provide electrically cooled containerized bottled-water type drinking water units, including paper supply. Provide drinking water at 45 to 55 degree Fahrenheit (7 to 13 deg C). Provide other temporary drinking facilities as specified elsewhere or as appropriate to the site and the Work.
- F. First Aid Supplies: Provide in adequate quantity and in locations convenient to principal areas of the Work. Comply with governing regulations.
- G. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
- H. Storage and Fabrication Sheds: Provide fully enclosed storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install office spaces ready for occupancy 15 days after date fixed in Owner-Contractor Agreement.
- B. Employee Residential Occupancy: Not allowed on Owner's Property.
- C. Use qualified personnel for installation of temporary facilities. Locate facilities as indicated within the Contract Documents. For facilities not so indicated: locate where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- D. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed.

3.02 PROTECTION OF TEMPORARY AND OTHER FACILITIES

- A. Temporary Fire Protection: Provide and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."
- B. Store combustible materials in containers in fire-safe locations.

- C. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
- D. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
- E. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the applicable permanent fire protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.

3.03 ENVIRONMENTAL PROTECTION

- A. Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result.
- B. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.04 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain temporary facilities in good operating condition until removal. Protect from damage by heat, humidity, and similar elements including brief periods of unexpected cold conditions.
 - 1. Maintain operation of temporary, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour day basis where required to achieve indicated results and to avoid possibility of damage.
 - 2. Keep the office clean and orderly for use for small progress meetings.
 - 3. Provide daily janitorial services for offices; periodic cleaning and maintenance for office and storage areas.
 - 4. Maintain approach walks free of mud, water, and debris.
- C. Termination and Removal:
 - 1. Unless the Project Consultant requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Ensure removal of footings, foundations and other subsurface or underground construction.

2. Complete and restore permanent construction that may have been delayed because of interference with the temporary facility.
3. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
4. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to and with the pre-agreement of the Owner.
5. Prior to Substantial Completion, clean and renovate permanent facilities that have been used during the construction period.

END OF SECTION

SECTION 01540 CONSTRUCTION AIDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Construction Aids

1.02 DESCRIPTION

- A. Furnish, install and maintain required construction aids, remove on completion of work.
- B. Modify or remove as required to accommodate each construction phase and as buildings are completed.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with Federal, State and Local codes and regulations.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS FOR MATERIALS

- A. Materials may be new or used, suitable for the intended purpose, but must not violate requirements of applicable codes and standards.

2.02 CONSTRUCTION AIDS

- A. Provide construction aids and equipment required by personnel and to facilitate the execute of the work: scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes, and other such facilities and equipment.
- B. Refer to respective sections for particular requirements for each trade.
- C. Maintain all equipment in a operable, clean and fully functional condition.
- D. Store and protect construction aids when not in direct use for the Work.

PART 3 EXECUTION

3.01 PREPARATION

- A. Consult with Project Consultant, review site conditions and factors which affect construction procedures and construction aids, including adjacent properties and public facilities which may be affected by execution of the work.

3.02 GENERAL REQUIREMENTS

- A. Comply with applicable requirements specified in the remainder of Division 1 and for all sections within Divisions 2 through 27.
- B. Relocate construction aids as required by progress of construction, by storage or work requirements, and to accommodate legitimate requirements of Owner and other contractors employed at the site.

3.03 REMOVAL

- A. Completely remove temporary materials, equipment and services:
 - 1. When construction needs can be met by use of permanent construction.
 - 2. At completion of the project.
- B. Clean, repair damage caused by installation or by use of temporary facilities.
 - 1. Remove foundations and underground installations for construction aids.
 - 2. Grade the areas of the site affected by temporary installations to required elevations and slopes and clean the area.

END OF SECTION

SECTION 01545

CONSTRUCTION SAFETY PLAN AND SECURITY REQUIREMENTS

PART 1 GENERAL

1.1 The COUNTY CONTRACT and Section 01540 – CONSTRUCTION SAFETY PLAN AND SECURITY REQUIREMENTS

- A. Precedence
 - 1. In case of disagreement between Section 01540 – CONSTRUCTION SAFETY PLAN AND SECURITY REQUIREMENTS and THE COUNTY CONTRACT, THE COUNTY CONTRACT shall govern.
- B. Related Sections:
 - 1. DIVISION 01 - GENERAL REQUIREMENTS Section(s):
 - a. 01045 – CUTTING AND PATCHING

1.2 DESCRIPTION

- A. The purpose of this plan is to set forth guidelines concerning construction and safety at the BROWARD COUNTY NORTH HOMELESS ASSISTANCE CENTER. Described herein are methods, procedures, rules and authorities to be adhered to during said construction period.
- B. This Contract is intended to provide for the optimum degree of safety to Homeless Assistance Center personnel, equipment and associated facilities; and to the Contractor's operations consistent with minimum interference to vehicles and/or personnel engaged in the day-to-day operation of the North Homeless Assistance Center. To this end, the Contractor shall observe all Homeless Assistance Center rules and regulations and all other operational limitations, which may be imposed from time to time. He shall provide marking, lighting, barricades, signs or other measures which are required to properly identify his construction areas, work sites, equipment, vehicles, storage areas and/or conditions which may be hazardous to Homeless Assistance Center operations. Details of measures to be used to insure safety during construction are delineated in this Section and on the Drawings.
- C. If the Contractor fails to maintain the marking, lighting, barricades, signs, etc., as required above, the COUNTY will cause appropriate safety measures to be installed by others and all cost thereof shall be charged to the Contractor and deducted by the COUNTY from monies due to the Contractor.
- D. Following are the general safety plan objectives that must be achieved in order to maximize safety and to minimize time and economic loss to the judicial community, construction contractors and others directly affected by the Project.
 - 1. Keep the Homeless Assistance Center operational for all users.
 - 2. Minimize delays to Homeless Assistance Center operations.
 - 3. Maintain safety of Homeless Assistance Center operations.

- E. The Contractor shall keep these objectives in mind when formulating his schedule and operational activities.
- F. The Contractor's responsibility for safety and security shall begin on the day when he starts Work or on the date of Notice to proceed, whichever is earlier, and continues until Final Completion and Acceptance of the Work.

1.3 SAFETY PROCEDURES

- A. In as much each Work area will be accessible to and used by the Public, the COUNTY, attorneys and other companies doing business at the Homeless Assistance Center during the construction period, it is the Contractor's responsibility to maintain each Work area in a safe, hazard free condition at all times. This will include barricades, fencing, taping up sharp corners or any other precautions necessary to protect the Public. Should the COUNTY, Consultant or Owner find the area unsafe at any time, he shall notify the Contractor, and the Contractor shall take whatever steps necessary to remedy the unsafe condition. Should the Contractor not be immediately available for corrective action, the Owner may remedy the problem and the Contractor shall reimburse the COUNTY for the expense of such correction.
- B. Fire Control: Flame cutting will be permitted only on steel parts that cannot be removed in any other manner and only when at least one person is standing by exclusively with a fire extinguisher within ten (10) feet of the Work and within full view of the area. The fire extinguisher shall have been tested and ready for use. The Contractor shall submit a fire protection plan to the Owner for approval prior to conducting the Work requiring said protection plan. All Hot Work being performed shall operate in accordance with NFPA – 51B. The Fire Department / BSO (Broward Sheriff's Office) shall be notified of any and all hot work at a minimum of twenty-four (24) hours in advance. Coordinate with BSO/Fire Marshall's Bureau at 954-831-8210. General Contractor shall pay for fire watch and obtain any fire permits.
- C. Work Near Fire Alarm: Caution shall be exercised as necessary when working near fire alarms so as not to accidentally activate fire alarms, doors or barriers.
- D. Protection of Property: Fixed structures, equipment, paving, landscaping and vehicles (automobiles, trucks, etc.) shall be protected with drop cloths, shielding and other appropriate measures to assure maximum protection of all property and vehicles.

1.4 GENERAL SAFETY REQUIREMENTS

- A. A construction/safety meeting will be conducted by the Owner after award of the Contract and prior to commencing construction. Additional construction/safety meetings may be scheduled as deemed necessary by the Owner throughout the life of the Contract. Representatives from the Contractor, Consultant, Owner and any others deemed necessary by COUNTY, will attend. The Contractor shall also conduct Safety/Security meetings as deemed necessary by the Owner and

three (3) copies of the minutes will be provided to the Owner within five (5) calendar days of the meeting. All Contractor and Subcontractor supervisors are required to attend.

- B. The Contractor shall conduct his construction activities to conform to both routine and emergency requirements. The Contractor shall provide initial and continuing instruction to all supervisors, employees, subcontractors and suppliers to enable them to conduct their Work in a manner that will provide the maximum safety with the least hindrance to the general public, Homeless Assistance Center employees, and to the workmen employed on the Site.
- C. CONTRACTOR shall comply with all federal, state and local safety requirements and standards, including 29 CFR OSHA safety and health standards and the policies outlined in the Broward County Safety Manual. The Broward County Safety Manual is available for review at the following link: <https://app.box.com/s/31oys2vt0d32zl2d7v4>.
- D. Work may be stopped, suspended by the Owner or COUNTY anytime the Owner or COUNTY considers that the intent of this Safety Plan is being violated or that a hazardous condition has been/was created. This decision to suspend the Work will be final and will only be rescinded by the Owner when satisfied that the Contractor has taken action to prevent recurrence. Delays/work stoppage as a result of the suspension of the Work will be considered the fault of the Contractor and shall not stop the Contract time for assessing liquidation damages.
- E. During construction, the Contractor shall maintain these areas in neat condition. Contractor's vehicles, equipment and materials shall be stored in the areas designated on the Drawings. Upon completion of the Work, the staging and storing areas shall be cleaned-up and returned to their original condition to the satisfaction of the Owner. Remove all construction fencing and barricades from the Project Site. No special payment will be made for clean-up and restoration of the storage area or temporary delivery area. Personal vehicles shall not be permitted beyond the Contractor's Construction Area.
- F. Intermittent Construction Operations:
 - 1. The Contractor shall maintain constant communication with the Owner when working and immediately obey all instructions from the Owner. Failure to so obey instructions or maintain constant communication with the Owner will cause to suspend the Contractor's operations until satisfactory conditions are assured.
 - 2. When directed to cease Work and move from the area, the Contractor shall immediately respond and move all material, equipment and personnel outside areas. Operations shall not be resumed until directed by the Owner. Every reasonable effort will be made by the Owner or the Consultant to cause minimum disturbance to the Contractor's operations. However, no guarantee can be made as to the extent to which disturbance can be avoided. Contractor's claim for additional Contract Time for any such disruption shall not be accepted.

- G. Emergency Procedures:
1. Emergency Procedure: In case of an emergency caused by accident, fire, or personal injury or illness, call 911 and notify the Project Manager. The caller must accurately report the location and type of emergency.
- H. Access to Construction Site:
1. The Contractor's access to the site shall be as coordinated with Owner and shall not interrupt normal Homeless Assistance Center operations.
 2. The Contractor shall not permit any unauthorized construction personnel or traffic on the site.
 3. The Contractor is responsible for immediate clean-up of any debris deposited as a result of his construction traffic. The entire construction site shall be kept free and clean of all debris at all times and maintained in good repair by the Contractor or his gents, and shall be immediately repaired to the satisfaction of the COUNTY.
- I. Contractor's Security Requirements:
1. Identification – Personnel: All workers must have contractor badges on their person at all times. Level 2 FDLE background checks will be required by the Owner for all workers. Contractor can go on line to www.fdle.state.fl.us to obtain a Florida Criminal History Search (FCHS) for each employee. The cost for each FCHS is \$24. Access to work areas must be coordinated with building management personnel.
 2. Employee Parking:
 - a. Parking for Contractor's employee's vehicles is the west parking lot as identified on the drawings. The Contractor shall perform all Work required to restore the area to its original condition.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01550 VEHICULAR ACCESS AND PARKING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preparation.
- B. Flag persons.
- C. Flares and lights.
- D. Traffic signs and signals.
- E. Haul routes.
- F. Access roads.
- G. Construction parking controls.
- H. Parking.
- I. Existing pavements and parking areas.
- J. Permanent pavements and parking facilities.
- K. Maintenance.
- L. Removal, repair.
- M. Mud from site vehicles.

1.02 RELATED SECTIONS

- A. Section 01110: Summary of Work: Work sequence - Owner occupancy.
- B. Section 01310: Project Management and Coordination - Project coordination.
- C. Section 01520: Construction Facilities -Temporary buildings and other temporary facilities.
- D. Section 01530: Temporary Construction -Temporary construction.
- E. Section 01580: Project Identification - Traffic directional and control signage.
- F. Division 2: Specifications for earthwork and paving bases.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Temporary Construction: Contractor's option.
- B. Earthwork, Paving Base and Topping Which Will Become Permanent Construction: As specified in product specification sections in Divisions 2 through 16.

2.02 SIGNS, SIGNALS, AND DEVICES

- A. Post Mounted and Wall Mounted Traffic Control and Informational Signs: Specified in Section 01580, Project Identification.
- B. Temporary Traffic Control Signals: As approved by local jurisdictions.
- C. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.
- D. Flagperson Equipment: As required by local jurisdictions.

PART 3 EXECUTION

3.01 PREPARATION

- A. Clear areas, provide surface [and storm] drainage of road, parking, area premises, and adjacent areas.

3.02 FLAG PERSONS

- A. Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

3.03 FLARES AND LIGHTS

- A. Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

3.04 TRAFFIC SIGNS AND SIGNALS

- A. At approaches to site and on site, install at crossroads, detours, parking areas, and other amenities elsewhere as needed to direct construction and affected public traffic.
- B. Install and operate traffic control signals as necessary to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.
- C. Relocate as Work progresses, to maintain effective traffic control.

3.05 HAUL ROUTES

- A. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.
- B. Confine construction traffic to designated haul routes.
- C. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.

3.06 ACCESS ROADS

- A. Construct temporary access roads from public thoroughfares to serve construction area, of a width and load bearing capacity to provide unimpeded traffic for construction purposes.
- B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.
- C. Extend and relocate as Work progress requires, provide detours as necessary for unimpeded traffic flow.
- D. Location as indicated on Drawings.
- E. Provide unimpeded access for emergency vehicles. Maintain 20 foot width driveways with turning space between and around combustible materials.
- F. Provide and maintain access to fire hydrants and control valves free of obstructions.

3.07 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and Owner's operations.
- B. Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.
- C. Prevent parking on or adjacent to access roads or in non-designated area

3.08 PARKING

- A. Arrange for or Provide temporary parking areas to accommodate use of construction personnel.
- B. When site space is not adequate, provide additional off-site parking.

3.09 EXISTING PAVEMENTS AND PARKING AREAS

- A. Use of designated existing on-site streets and driveways used for construction traffic is permitted. Tracked vehicles not allowed on paved areas.
- C. Do not allow heavy vehicles or construction equipment in parking areas.

3.10 PERMANENT PAVEMENTS AND PARKING FACILITIES

- A. The base for permanent roads and parking areas may be used for construction traffic.
- B. Avoid traffic loading beyond paving design capacity. Tracked vehicles not allowed.

3.11 MAINTENANCE

- A. Maintain traffic and parking areas in a sound condition free of excavated material, construction equipment, Products, mud or other debris.
- B. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

3.12 REMOVAL, REPAIR

- A. Remove temporary materials and construction when permanent paving is usable.
- B. Remove underground work and compacted materials to a depth of 2 feet; fill and grade site as specified.
- C. Repair permanent facilities damaged by use, to original or specified condition, whichever is most stringent.
- A. Remove equipment and devices when no longer required.
- B. Repair damage caused by installation.
- C. Remove post settings to a depth of 2 feet.

3.13 MUD FROM SITE VEHICLES

- A. Provide means of removing mud from vehicle wheels before entering streets.

END OF SECTION

SECTION 01560 TEMPORARY BARRIERS AND ENCLOSURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Barriers and Barricades
- B. Fences
- C. General Environmental Controls
- D. Security Programs
- E. Tree and Plant Protection

1.02 RELATED DOCUMENTS

- A. Section 01110: Summary of Work: Work sequence, Owner occupancy.
- B. Section 01310: Project Management and Coordination: Project coordination.
- C. Section 01520: Construction Facilities - Temporary buildings and other temporary facilities.
- D. Section 01530: Temporary Construction - Temporary construction.
- E. Section 10620: Product Options - Hazardous Materials.

1.03 SUBMITTALS

- A. Submit written certification by an ISA Certified Arborist that:
 - 1. Trees and other plant materials indicated to remain have been protected during the course of construction in accordance with recognized standards of the industry.
 - 2. Indicate that damaged trees or plant materials were promptly and properly treated.
 - 3. Indicate which damaged trees or other plant materials, if any, are incapable of retaining full growth potential and are recommended to be replaced.

1.04 BARRIERS AND BARRICADES

- A. Provide barriers to prevent unauthorized entry to construction areas to allow for Owner's use of site, and to protect adjacent properties from damage from construction operations.
 - 1. Comply with standards and code requirements for erection of structurally adequate barriers.

2. Install barriers of a neat and uniform appearance. Surfaces exposed to public view: Paint with colors as selected by the Project Consultant.
 3. Provide graphics and warning signs to inform personnel and the public of the hazard being protected against.
 4. Where appropriate and needed provide lighting, including flashing red or amber lights.
 5. Provide barriers at public rights-of-way and for public access when adjacent to construction operations.
- B. Provide barricades with blinking beacon light at all open trenches and other excavations.
- C. Provide protection as specified below for plant life designated to remain.
- D. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

1.05 FENCING

- A. Prior to the Start of Construction Activities: Provide temporary 8 foot high enclosure fencing around construction site; equipped with vehicular and pedestrian gates with locks.
- B. Construction:
1. Commercial grade chain link fence.
 - a. Provide galvanized posts and fabric in new condition.
 - b. Provide vision screening where fencing is adjacent to student occupied areas.
 - c. Provide vision screening or other acceptable measures where fencing separates site from adjacent residential areas.
 2. Barbed wire, concertina wire and other potentially injurious fencing materials: Not Permitted.
 3. Install in a manner that will prevent people, dogs and other animals from easily entering the site, except by the vehicular or pedestrian entrance gates.
- C. Location:
1. Locate fencing as indicated on the drawings and as confirmed by the Project Consultant.
 2. Locate vehicular entrance gate as indicated on drawings to accommodate convenient, controlled vehicular access to the Contractor's staging area, temporary facilities, and construction areas.
 3. Locate pedestrian entrance gates as required to provide controlled personnel entry in suitable relation to construction parking facilities and Contractor's temporary offices.

1.06 ENCLOSURES

A. Exterior Enclosures

1. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary cooling, brief seasonal heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons.
2. Provide access doors with self-closing hardware and locks.

B. Interior Enclosures

1. Provide temporary partitions and ceilings to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.
2. Construction:
 - a. Temporary Dust Partitions: Where extended construction operations of less than 3 weeks are adjacent or within Owner occupied spaces or finished interior work, provide temporary dust partitions constructed of wood or metal framing and reinforced translucent polyethene sheet materials with closed joints and sealed edges at intersections with existing surfaces.
 - b. Duct, Register and Grille Protection: Securely seal air conditioning and ventilation ducts, registers, grilles, outlets and other system components with polyethelene prior to conducting any dust or other contaminent producing construction activities.

C. Structural Enclosures:

1. Close openings through floor or roof decks and horizontal surfaces with load-bearing wood-framed construction or other structural elements necessary to render safe for the loads imposed.
2. Provide temporary roofing as necessary to provide appropriate watertight enclosure and to protect interior spaces and materials.

1.07 GENERAL ENVIRONMENTAL CONTROLS

A. Dust Control:

1. Execute Work by methods to minimize raising dust from construction operations.
2. Provide positive means to prevent air-borne dust from dispersing into atmosphere.
3. Periodically dampen construction areas prone to dust generation or blowing dust during periods of infrequent or below normal rainfall for south Florida and as necessary to prevent blowing dust from affecting adjacent properties, Owner occupied spaces or other elements of the Work.

B. Noise Control:

1. Provide methods, means, and facilities to minimize noise produced by construction operations.
2. Schedule excessively noisy or disruptive operations (Consult with owner for schedule)
3. Observe local ordinances limiting noise generating operations within the neighborhoods adjacent to the area of the Work.

C Pollution Control:

1. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.
2. Do not violate environmentally sensitive lands without proper permits from the Authorities Having Jurisdiction and a written notice to proceed with those particular operations issued by the Owner.

1.08 SECURITY PROGRAMS

- A. Protect Work, and existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

B. Entry Control:

1. Restrict entrance of persons and vehicles into Project site.
2. Allow entrance to areas of Work only to authorized persons with proper identification.
3. Maintain log of workmen and visitors, make available to Owner on request.
4. Owner will control entrance of persons and vehicles related to Owner's operations.

F. Restrictions:

1. Do not allow cameras or video recorders within Owner occupied site areas or photographs except by written approval of Owner.

- G. Provide all personnel with instruction as to the possible presence of Library personell in and around the construction site and the precautions necessary to ensure children's safety while conducting construction operations, operating motor vehicles or equipment, or any other associated activity.

1.09 TREE AND PLANT PROTECTION

- A. Temporary protection: Protect existing landscape materials and other site improvements designated to remain from damage through the use of temporary fencing and other protective procedures as further specified below.
- B. Due to the heavily wooded site conditions, contractor shall take all the necessary precautions to avoid fires on site.

PART 2 PRODUCTS

2.01 PRODUCT REQUIREMENTS

- A. General:
 - 1. Provide new materials; if acceptable to the Project Consultant, undamaged previously used materials in serviceable condition may be used.
 - 2. Provide materials suitable for the use intended.
- B. Barriers and Exterior Enclosures:
 - 1. Lumber and Plywood: Comply with requirements in applicable Division 6 specification sections.
 - a. For exterior fences and vision barriers, provide exterior type, minimum 3/8" thick plywood.
 - b. For safety barriers, sidewalk bridges and similar uses, provide minimum 5/8" thick exterior plywood.
 - 2. Paint: Comply with general painting requirements of Division 9:
 - 1. For job-built barriers, fences and other exposed lumber and plywood, provide exterior grade acrylic-latex emulsion over exterior primer.
 - 2. For sign panels and applying graphics, provide exterior grade alkyd gloss enamel over exterior primer.
- B. Barricades: Standard metal folding barricades with reflective finishes. Provide with or without battery powered flashing lights as appropriate for hazard..
- C. Fencing:
 - 1. Galvanized Fabric: #9 wire (.148 inch) in diameter, 2 inch mesh fabric with top selvages knuckled.
 - 2. 6 gage minimum bottom tension wire attached to fence fabric with hog rings at 24 inches on center.
 - 3. Posts, top rails, braces, and gate frames: Schedule 40 galvanized pipe as per ASTM A 120 or SS40 Tube pipe. Finish all rails and posts to match fence fabric.

4. Gate Frames: As per C.L.F.M.I. requirements with welded connections.
5. Fabric Connections:
 - a. Securely fasten fabric to all terminal posts with 3/16 inch by 3/4 inch tension bars and bevelled edge 11-gage tension bands.
 - b. Number of tension bands: one band less than the height of the fabric in feet for each tension bar.
 - c. Fasten all fabric to intermediate posts with 9-gage galvanized wires not to exceed 14 inches apart.
 - d. Tie fabric to top rail with 9-gage galvanized wire not to exceed 24 inches apart.
 - e. Fasten bottom edge of fabric to bottom tension wire using hog rings at intervals not to exceed 24 inches on center.
 - f. Intermediate Post Tops: Malleable iron.
 - g. Hinges: Malleable Iron, hot dipped galvanized
 - h. Latches: Malleable Iron, hot dipped galvanized.
 - i. Hardware required for wide vehicular access gates: Adequately strong swinging or rolling hardware apparatus at Contractor's option.

D. Separation Partitions:

1. Wood Framing: Comply with product and installation requirements of Division 6.
2. Metal Framing: Comply with product and installation requirements of Division 9.
3. Insulation: Provide glass fiber batt insulation.
4. Gypsum Wallboard: Comply with product and installation requirements of Division 9.
5. Paint:
 - a. Provide two coats interior latex semi-gloss wall paint.
 - b. Color as selected by Project Consultant.
 - c. Comply with product and installation requirements of Division 9.

- E. Temporary Dust Partitions: Where extended construction operations of less than 3 weeks are adjacent or within Owner occupied spaces, provide temporary dust partitions constructed of wood or metal framing and reinforced opaque polyethene sheet materials with closed joints and sealed edges at intersections with existing surfaces.

1. Wood Framing: Comply with product and installation requirements of Division 6.
2. Metal Framing: Comply with product and installation requirements of Division 9.
3. Sheeting: Provide translucent nylon reinforced laminated polyethylene sheeting attached securely to wood or metal framing so as to avoid tears, leaks, or openings.

F. Tree and Plant Protection:

1. Tree pruning compound: Waterproof, antiseptic, elastic and free of kerosene, coal tar, creosote, and other substances harmful to plants.
2. Drainage fill: selected stone or gravel, graded to pass a three inch sieve and retained on a one inch sieve.
3. Topsoil: In accordance with Division 2 requirements for topsoil.
4. Wood fencing:
 - a. Posts: 4 inch x 4 inch pressure treated wood.
 - b. Rails: 2 inch x 4 inch pressure treated wood.
 - c. Exposed height above grade: 6 feet - 0 inches.

PART 3 EXECUTION

3.01 BARRIERS, BARRICADES AND ENCLOSURES

- A. Install temporary items under provisions specified above or, where not specified, to level of quality suitable for the intended purpose as judged by the Project Consultant.

3.02 PROTECTION OF TREES AND PLANT MATERIALS

A. Preparation:

1. Verify that existing plant life and features designated to remain are tagged or identified.
2. Identify branches and roots that may interfere with construction.

B. Continuous Protection of Trees and Plants:

1. Protect existing trees scheduled to remain against injury or damage, including cutting, breaking, or skinning of roots, trunks or branches; smothering by stockpiled construction materials, excavated materials or vehicular traffic within branch spread.
2. Protect designated trees with a temporary orange high density polyethylene safety fence, 4'Ht. Fastened to top, bottom and center with galvanized steel wire.

- a. Unless approved by the owner, the barrier shall be placed at the drip line of the tree.
 - b. Increase enclosure size as directed for large trees.
3. Erect temporary fencing before commencing site preparation work.
 4. Maintain fencing during full construction period.
- B. Root System Protection:
1. Do not store construction materials, debris, or excavated material within the drip line which is the outer perimeter of branches.
 2. Do not permit vehicles within the drip line. Restrict foot traffic to prevent excessive compaction of soil over root systems.
 3. Protect tree root systems from damage due to noxious materials in solution caused by run-off or spillage during mixing and placement of construction materials or drainage from stored materials.
 4. Protect root systems from flooding, erosion, continuous running water or excessive wetting resulting from dewatering operations.
- C. Relocate and protect large boulders and rocks identified by Owner to remain as final landscaping elements.
- D. Clearing and Grubbing:
1. After providing fenced protection for trees and plants to remain, clear and grub site areas as required in Division 2.
 - a. Selective Clearing:
 - 1) In areas where trees are to remain, remove all undergrowth, dead trees, stumps, roots, vines, and other debris.
 - 2) Strip grass materials to a maximum depth of 1" under tree canopies.
 - 3) Carefully till or scarify existing grade to a depth of 1".
 - b. Grubbing: Scarify the areas where vegetation or other unsuitable materials occur to a minimum depth of six inches until all such materials are loosened and remove from the site.
 - 1) Use only hand methods for grubbing inside the drip line of trees indicated to remain.
 - 2) Fill depressions caused by clearing and grubbing operations with satisfactory soil materials and compact and grade in accordance with Division 2 requirements.

2. Remove and stockpile topsoil under provisions of Division 2 except where removal will be detrimental to existing trees and plants.

E. Root and Branch Trimming:

1. Consult with Project Consultant to request removal of roots and branches that interfere with construction.
2. Upon Project Consultant's approval of branch or root removal, employ qualified tree surgeon to:
 - a. Remove branches from trees which are to remain, if required to clear new construction.
 - b. Carefully and cleanly cut roots and branches of trees indicated to remain, where roots and branches obstruct new construction, with sharp pruning instruments.
 - 1) Do not break or chop roots or branches.
 - 2) Paint cuts over 1/2 inch in size with tree pruning compound.
 - c. Recommend procedures to compensate for loss of roots and perform initial pruning of branches and stimulation of root growth where removed to accommodate new construction.
 - d. Extend pruning operation to restore natural shape of entire tree.

F. Excavation Around Trees

1. Excavate within drip line of trees only where indicated.
2. Where trenching for utilities is required within the drip line, tunnel around roots by hand digging.
3. Do not cut main lateral roots or tap roots; cut smaller roots which interfere with installation of new work.
4. Cut roots with sharp pruning instruments: Do not break or chop.
5. Do not allow exposed roots to dry out before permanent backfill is placed:
 - a. Provide temporary earth cover, or pack with peat moss and wrap with burlap.
 - b. Water and maintain in moist condition and temporarily support and protect from damage until permanently relocated and covered with earth.
 - c. Utilize tree surgeon to prune branches to balance loss to root system caused by damage or cutting of root system.

G. Grading And Filling Around Trees:

1. Maintain existing grade within drip line of trees, unless otherwise indicated.

2. Lowering grades:

- a. Where existing grade is above new finish grade shown around trees, carefully hand excavate within drip line to new finish grade.
- b. Cut roots exposed by excavation or provide permanent protections as recommended by tree surgeon.

H. Raising Grades:

1. Minor filling:

- a. Where existing grade is six inches or less below elevation of finish grade shown, use a topsoil fill material.
- b. Place in single layers and do not compact; hand grade to required finish elevations.

2. Moderate filling:

- a. Where existing grade is more than 6 inches, but less than 12 inches, below finish grade elevation, place a layer of drainage fill on existing grade prior to placing topsoil.
- b. Carefully place against tree trunk approximately 2 inches above finish grade and extend not less than 18 inches from tree trunk on all sides.
- c. For balance of area within drip line perimeter, place drainage fill to an elevation six inches below grade and complete fill with a layer of topsoil to finish grade elevation.
- d. Do not compact stone or gravel or topsoil layers; hand grade to required elevations.

I. Repair And Replacement Of Trees:

1. Repair trees damaged by construction operations. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged trees.
2. Remove and replace dead and damaged trees which are determined by the tree surgeon to be incapable of restoration to normal growth pattern.
3. Provide new trees of same size and species as those replaced, up to 6 inch caliper. For replacement of trees over 6 inches in caliper taken 12 inches above grade, provide new trees of 6 inch caliper, and of the same species as selected by the Project Consultant.
4. Repair and replacement of trees scheduled to remain and damaged by construction operations or lack of adequate protection during construction operations shall be at Contractor's expense.
5. Contractor shall process any permits required by the governing agencies to maintain and repair trees.

3.03 REMOVAL OF TEMPORARY BARRIERS, ENCLOSURES AND PROTECTIONS

- A. Remove temporary barriers, barricades, fencing, enclosures and protections as warranted by the progress of the Work and prior to Substantial Completion.
- B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition or as specified elsewhere in the Contract Documents.

END OF SECTION

SECTION 01570 TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Erosion and Sediment Control
- B. Pest Control

1.02 RELATED DOCUMENTS

- A. Section 01010: Summary of Work: Work sequence, Owner occupancy.
- B. Section 01310: Project Management and Coordination - Project coordination.
- C. Section 01520: Construction Facilities - Temporary buildings and other temporary facilities.
- D. Section 01530: Temporary Construction - Temporary construction.
- E. Section 01560: Temporary Barriers and Enclosures

1.03 PEST CONTROL

- A. Provide methods, means, and facilities to prevent pests, insects and rodents from infesting the area of the Work.

1.06 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary above grade or buried controls as warranted by the progress of the Work or prior to Substantial Completion.
- B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition or as specified elsewhere in the Contract Documents.
- E. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01610 BASIC PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Product List Schedule
- B. General Product Requirements

1.02 RELATED DOCUMENTS

- A. Section 01330: Submittal Procedures
- B. Section 01620: Product Options

1.03 SUBMITTALS

- A. Proposed Product List:
 - 1. Prepare a schedule showing products specified in a tabular form acceptable to the Project Consultant as specified below.
 - 2. Coordinate the product list schedule with the Contractor's Construction Schedule and the Schedule of Submittals.
 - 3. Format: Prepare the product listing schedule with information on each item tabulated under the following column headings:
 - a. Related Specification Section number.
 - b. Generic name used in Contract Documents.
 - c. Proprietary name, model number and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date, or time span of delivery period.
 - 4. Initial Submittal: Within 15 days from receipt of Notice to Proceed, submit 3 copies of an initial product list schedule.

- a. Provide a written explanation for omissions of data, and for known variations from Contract requirements.
 - b. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.
5. Completed Schedule: Within 45 days from receipt of Notice to Proceed, submit 3 copies of the completed product list schedule.
- a. Provide a written explanation for omissions of data, and for known variations from Contract requirements.
 - b. Provide comprehensive listing of product selections and designations for all major products.
6. Project Consultant's Action:
- a. The Project Consultant will respond in writing to the Contractor within 2 weeks of receipt of the completed product list schedule.
 - b. No response within this time period constitutes no objection to listed manufacturers or products, but does not constitute a waiver of the requirement that products comply with Contract Documents.
 - c. The Project Consultant's response will include:
 - 1) A list of unacceptable product selections, containing a brief explanation of reasons for this action.
 - 2) A request for additional data necessary for the review and possible acceptance of the products and manufacturers listed.

1.04 GENERAL PRODUCT REQUIREMENTS

A. Definitions:

- 1. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.
- 2. Materials: are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
- 3. Equipment: is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

B. Do not use products removed from existing premises, other facilities or other construction sites, except as specifically permitted by the Contract Documents.

C. Provide interchangeable components of the same manufacturer, for similar components.

- D. Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.
 - 1. Provide manufactured and fabricated products that produced and assembled in accord with the best design, engineering and shop practices.
 - 2. Provide products that are suitable for the service conditions.
 - 3. Adhere to specified product, equipment and component capacities, sizes and dimensions.
 - 4. Provide identical products when multiples of the same product are required.
 - 5. Do not use material or equipment for any purpose other than that designated or specified.
- E. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
- F. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- G. Continued Availability: Where, because of the nature of its application, the Owner is likely to need replacement parts or additional amounts of a product at a later date, either for maintenance and repair or replacement, provide standard, domestically produced products for which the manufacturer has published assurances that the products and its parts are likely to be available to the Owner at a later date.
- H. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.
- I. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.
- J. Equipment Nameplates:
 - 1. Provide a permanent nameplate on each item of service-connected or power-operated equipment.
 - 2. Locate on an easily accessible surface which is inconspicuous in occupied spaces.
 - 3. The nameplate shall contain the following information and other essential operating data:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.

- e. Ratings.

1.05 TOXIC SUBSTANCES

- A. Before any such substance may be used, the Contractor shall notify the Project Consultant and Owner, in writing, at least three working days prior to using the substance. The notification shall contain:
 - 1. Name of substance to be used.
 - 2. Where substance is to be used.
 - 3. When substance is to be used.
- B. Other Prohibited Materials: In addition to the restrictions placed by Chapter 87-202, Laws of Florida, use of the following materials is strictly prohibited on Broward County, Florida projects:
 - 1. Asbestos bearing materials.
 - 2. Cellulose or urea formaldehyde foam insulation products.
 - 3. Lead in plumbing pipe solders or other plumbing components.
- D. Handling of toxic or hazardous materials:
 - 1. Storage: Do not store any chemical or otherwise hazardous product in any size container outside of a building. Provide proper secondary containment barriers for all stored chemicals or hazardous materials.
 - 2. Do not discharge any volume of any material or chemical directly onto the ground, into any water source, or into any storm drain. Discharge materials or chemicals into sanitary sewer system in accordance with local, Broward County, and State of Florida requirements.
 - 3. Do not store buckets, drums, large containers of chemicals or other hazardous materials on site. Dispose of on any such containers off site in accordance with local, Broward County, and State of Florida requirements.
 - 4. The Contractor shall remove all chemical products from the site at the completion of its use for immediate prosecution of the Work. Extra stock materials shall be properly stored on site and conveyed by the Contractor upon notice by the Owner to a storage area designated by the Owner.
 - 5. Material Safety Data Sheets (MSDS) shall be maintained by the Contractor on site at all times for all chemicals/products.
- E. Contractor's Responsibility:

1. The Contractor is responsible for materials and chemicals used during the prosecution of the Work.
2. Any contractor who spills or leaves hazardous materials on or near the site or any other location used in connection with prosecuting the Work which cause an environmental problem or cause a notice of compliance issued by any authoritative Federal, State and Local governmental agency; shall be responsible for:
 - a. Any and all cleanup costs
 - b. Any and all enforcement fines/penalties and any other associated cost and/or actions deemed necessary as to resolve the problem, to the satisfaction of the respective jurisdictional agency and the Owner.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
- B. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION

SECTION 01620 PRODUCT OPTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Product Quality Assurance.
- B. Product Selection

1.02 RELATED DOCUMENTS

- A. Section 01610: Basic Product Requirements
- B. Section 01630: Product Substitution Procedures

1.03 PRODUCT QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.
- B. Compatibility of Options: Compatibility of products is a basic requirement of product selection. When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

PART 2 PRODUCTS

2.01 PRODUCT SELECTION

- A. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:
- B. General: The compliance requirements, for individual products as indicated in contract documents; are multiple in nature and may include generic, descriptive, proprietary, performance, prescriptive, compliance with standards, compliance with codes, conformance with graphic details and other similar forms and methods of indicating requirements, all of which must be complied with. Also "allowances" and similar provisions of contract documents will have a bearing on selection process.
- C. Procedures for Selecting Products: The Contractor's options in selecting products are limited by requirements of the contract documents and governing regulations. They are not controlled by industry traditions or procedures experienced by the Contractor on previous construction projects. Required procedures include but are not limited to the following for the various indicated methods of specifying:

D. Single Product/Manufacturer Name as Basis of Design or Standard of Comparison: Provide product indicated, unless "equal" or "equivalent" products with listed salient features for equivalency are permitted. The equipment and material product specifications provided in the project contract documents define the basis of the project design but are in no way intended to be proprietary. However, proposed substitute products or systems must be compatible with all other systems, components, fabrications or devices included in this scope of work. Prior to the time of Bid Submission and during the identified period, the County and its' Consultants will consider requests from the Bidder(s) for alternate/equivalent products in place of those specified under the conditions set forth below:

1. Advise Broward County and Project Consultant by submitting Requests for Information (RFI) through the online County bidding system, "BidSync" for each product or system substitution request. The County will distribute the RFI for review and post the response through "BidSync."
2. At a minimum, attach the following information to the RFI for the substitute product or system.
 - a) Product data, including images and descriptions of the product.
 - b) A detailed comparison table of significant qualities, including but not limited to: the performance, dimensions, weight, finish, capacities, and other specifications of the proposed substitution as directly compared to the specified product.
 - c) Samples if applicable or requested by the County.
 - d) Identify impacts to the work as delineated in the contract documents i.e. compatibility, sustainability, maintenance, life cycle cost.
3. If the substitution request is for a system, also include impact information on any other affected components of the work including but not limited to other devices, equipment, systems, fabrications, structures, etc.
4. Acceptance of an alternate or equivalent product or system does not alleviate the Contractor's requirement to provide a complete and fully-functioning system in accordance with the contract documents.
5. Failure to follow this procedure during bidding indicates that Contractor's bid includes all costs associated to provide, install and warrant the Single Product/Manufacturer
6. Name as Basis of Design or Standard of Comparison for the work. The County at its' option, may elect to accept alternates under the provisions of Section 01630 following award of the agreement.

- E. Two or More Product/Manufacturer Names: Provide one of the named products, at Contractor's option; but exclude products that do not comply with requirements. Do not provide or offer to provide an unnamed product, except where none of named products comply with requirements or are a feasible selection; advise County through the RFI process described in 2.01 D. above or in accordance with Section 01630 before proceeding.
- F. "Named" Product: Except as otherwise indicated, is defined to mean manufacturer's name for product, as recorded in published product literature, of latest issue as of date of contract documents. Refer requests to use products of a later (or earlier) model to Project Consultant for acceptance in accordance with Section 01630 before proceeding.
- G. Standards, Codes and Regulations: Where only compliance with an imposed standard, code or regulation is required, selection from among products which comply with requirements including those standards, codes and regulations, is Contractor's option.
- H. Performance Requirements: Provide products which comply with specific performances indicated, and that are recommended by manufacturer for the application indicated.
 - 1. The manufacturer's recommendations may be contained in published product literature, or by the manufacturer's individual certification of performance.
 - 2. General overall performance of a product is implied where the product is specified for specific performances.
- I. Descriptive Specification Requirements: Provide products which have been produced in accordance with descriptive requirements, using specified ingredients and components, and complying with specified requirements for mixing, fabricating, curing, finishing, testing and similar operations in manufacturing process.
- J. Visual Matching: Where matching an established sample is required, the final judgment of whether a product proposed by the Contractor matches the sample satisfactorily will be determined by the Project Consultant. Where there is no product available within the specified product category that matches the sample satisfactorily and also complies with other specified requirements, comply with the provisions of the contract documents concerning "change orders" for the selection of a matching product in another product category, or for non-compliance with specified requirements.
- K. Visual Selection: Except as otherwise indicated, where specified product requirements include the phrase "...as selected from the manufacturer's standard colors, patterns, textures..." or similar phrases, the Contractor has the option of selecting the product and manufacturer, provided the selection complies with other specified requirements. The Project Consultant is subsequently responsible for selecting the color, pattern and texture from the product line selected by the Contractor.

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01630 PRODUCT SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General Requirements
- B. Submittals
- C. Project Consultant's Action
- D. Conditions
- E. Compliance with the Contract Documents

1.02 RELATED DOCUMENTS

- A. Document BCF 170: Form of Agreement
- B. Document 01630a: Contractor's Substitution Request
- C. Section 01250: Contract Modification Procedures
- C. Section 01610: Basic Product Requirements
- D. Section 01620: Product Options

1.03 GENERAL REQUIREMENTS

- A. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions." The following are not considered substitutions:
 - 1. Substitutions requested by Bidders during the bidding period, and accepted prior to award of Contract, are considered as included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
 - 2. Revisions to Contract Documents requested by the Owner or Project Consultant.
 - 3. Specified options of products and construction methods included in Contract Documents.
 - 4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

5. The Contractor's unilateral incorporation of non-specified products, materials and equipment into the Work.
6. The Contractor's unilateral incorporation of products, materials and equipment which do not conform to the requirements of the Contract Documents into the Work.

1.04 SUBMITTALS

- A. Substitution Request Submittal: Submit three (3) copies of all substitution requests to the Project Consultant on **Document 01630a, Contractor's Substitution Request**.
 1. Include the information and documentation required on Document 01630a and other information necessary for an evaluation by both the Owner and the Project Consultant.
 2. The burden of proof of the merit of the proposed substitution is upon the Contractor.
 3. Substitution requests deemed incomplete or incorrect by the Project Consultant will be disapproved.
 4. The Owner's decision, based upon recommendations of the Project Consultant, of approval or disapproval of a proposed substitution shall be final.
- B. Requests for substitution will be considered if received within thirty (30) days after receipt of Notice to Proceed. Requests received more than thirty (30) days after receipt of Notice to Proceed may be considered or rejected at the discretion of the Project Consultant. Once a recommendation has been delivered, the Project Consultant reserves the right to be compensated for any extra requested review on the same product.
- C. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 1. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
 2. Samples, where applicable or requested.
 3. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
 4. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors, that will become necessary to accommodate the proposed substitution.
 5. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.

6. Cost information, including a proposal of the net change, if any in the Contract Sum.
7. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time, that may subsequently become necessary because of the failure of the substitution to perform adequately.

1.05. PROJECT CONSULTANT'S ACTION

- A. Within seven (7) days of receipt of the request for substitution, the Project Consultant will request additional information or documentation necessary for evaluation of the request.
- B. Within fourteen (14) days of receipt of the request, or one week of receipt of the additional information or documentation, whichever is later, the Project Consultant will notify the Contractor of the Owner's acceptance or rejection of the proposed substitution.
- C. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name.
- D. Acceptance:
 1. Acceptance will be in the form of Document 01250f: Project Consultant's Supplemental Instructions for those accepted substitutions which do not alter the Contract Sum or Time.
 2. Acceptance will be in the form of a Change Order for those accepted substitutions which alter the Contract Sum or Time.

PART 2 PRODUCTS

2.01 CONDITIONS

- A. The Contractor's substitution request will be received and considered by the Project Consultant and Owner when one or more of the following conditions are satisfied as determined by the Project Consultant:
 1. Substitution Request is timely, fully documented and properly submitted.
 2. The request is directly related to an "or equal" clause or similar language in the Contract Documents for which the Contract Documents do not prescribe a particular remedy.
 3. The specified product or method of construction is no longer available during the course of the Work or cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of the Contractor's failure to pursue the Work promptly or coordinate activities properly.
 4. The Owner has deemed the specified products or methods are no longer suitable or appropriate for incorporation into the Work.

5. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Project Consultant for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.
- C. Substitution requests which do not, at the Project Consultant's discretion, meet the criteria specified above will be returned without action except to record noncompliance with these requirements.

2.02 COMPLIANCE WITH CONTRACT DOCUMENTS

- A. The Contractor's submittal and Project Consultant's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.
- B. Replacement of products, materials and equipment not specified or not complying with the Contract Documents is the sole responsibility of the Contractor.

PART 3 EXECUTION

Not Used

END OF SECTION



Document 01630a: Contractor's Substitution Request

To:

(Project Consultant)

Project No:

Project Title:

Facility Name:

Request No.:

Date:

Date of NTP Receipt:

(One Substitution request per form)

We hereby submit for your consideration the following product instead of the specified item for the project identified above:

Specification Section: _____ Paragraph: _____ Specified Item: _____

Drawing Sheet Number(s): _____ Detail, Plan or Section Number(s): _____

Proposed Substitution:

Manufacturer

Company Name:

Phone:

Address:

City, State, Zip:

Local Vendor:

Company Name:

Phone:

Required Attachments:

1. Attach names and addresses of previous projects on which this product was utilized. Include project owner's contact and phone number.
2. Attach complete reason(s) for the proposed substitution.
3. Attach complete technical data, including applicable laboratory test reports. Include complete information on changes to drawings and/or specifications which the proposed substitution will require for its proper installation.
4. Attach proposed schedule of compensation to the Project Consultant for changes to the as-built drawings caused by the product substitution.
5. Attached construction permits revisions caused by the proposed substitution.
6. Attach details, drawings, specification necessary to show how the changes impact the design.
7. Check items submitted with this substitution request:

Catalog Drawings Samples Tests/Reports

Other:

Completion of the following information is required:

1. This substitution will result in a **saving or credit** to the Owner in the amount of:

	Dollars	\$
Written		Figures

- 2. Does the proposed substitution affect dimensions shown on the drawings or other specified clearances? Yes No

- 3. Will the undersigned pay for changes to the building design, including the costs of all engineering, detailing and other administrative costs caused by requested substitution? Yes No

- 4. Manufacturer's guarantees and warranties of the proposed and specified items are: The Same
 Different

- 5. What effect does the proposed substitution have on other trades? None
 Effect
Attach details.

The Undersigned states that this substitution request has been fully checked and coordinated with the Contract Documents, that all information is true and accurate, and that the undersigned shall bear full responsibility for impacts to the design, coordination, required schedule and costs of the project occasioned and impacted by this request if approved by the Owner.

Submitted By:

Company Name &
Address:

Phone:

Signature

Title

DO NOT WRITE BELOW THIS LINE

FOR OFFICIAL USE ONLY

For Project Consultant's Use Only	For Owner's Use Only
<input type="checkbox"/> Recommend Approval <input type="checkbox"/> Not Recommended <input type="checkbox"/> See Attached <input type="checkbox"/> Received Too Late	<input type="checkbox"/> Recommend Approval <input type="checkbox"/> Not Recommended <input type="checkbox"/> See Attached <input type="checkbox"/> Received Too Late
By: _____ (Signature)	By: _____ (Signature)
Date: _____	Date: _____

Distribution: 1. Project Consultant 2. Project Mgr 3. MGC/Contractor 4. Project File 5.

SECTION 01663 PRODUCT DELIVERY, STORAGE AND HANDLING REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Product Transportation and Delivery
- B. Product Storage, Protection and Handling

1.02 RELATED DOCUMENTS

- A. Document BCF 170: Form of Agreement
- B. Section 01290: Payment Procedures
- C. Section 01320: Construction Progress Documentation
- D. Section 01450: Quality Control

1.03 PRODUCT TRANSPORTATION AND DELIVERY

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
- C. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
- D. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
- E. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- F. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
- G. Keep and maintain shipping receipts, damage reports, and other shipping/delivery documentation as project records.

1.04 PRODUCT STORAGE, PROTECTION AND HANDLING

- A. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.

- B. Periodically inspect storage areas to assure products are undamaged and are maintained under specified conditions.
- C. Make stored materials available for Owner's inspection and inventory prior to and on dates of project meetings.
- D. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible.
- E. Protect sensitive materials from weather and climate.
- F. Maintain temperature and humidity within range required by manufacturer's instructions.
- G. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
- H. Exterior Storage:
 - 1. Store fabricated products above ground on blocking or skids to prevent soiling or staining.
 - 2. Cover products subject to deterioration with impervious sheet covering.
 - a. Provide ventilation to avoid condensation.
 - b. Ensure adequate drainage: Do not allow standing water on top of impervious sheeting.
 - 3. Loose granular materials (including sands and other aggregates):
 - a. Store on well drained solid surfaces only.
 - b. Cover with impervious sheet covering or provide other weatherproof enclosure.
 - 4. Prevent mixing with ground, run-off, sprayed or spilled contaminants.
- I. Provide equipment and personnel to store and handle products by methods to prevent soiling, disfigurement, or damage.
- J. Replace materials improperly transported, stored or handled at no additional cost to the Owner.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01700 PROJECT CLOSEOUT

PART 1 GENERAL

1.1 The COUNTY CONTRACT and Section 01700 – PROJECT CLOSEOUT

- A. Precedence
 - 1. In case of disagreement between Section 01700 – PROJECT CLOSEOUT and THE COUNTY CONTRACT, THE COUNTY CONTRACT shall govern.

1.2 DESCRIPTION

- A. Project Closeout is hereby defined to include general requirements near end of Contract Time, in preparation for Final Completion and Acceptance, Final Payment, normal termination of Contract, occupancy by COUNTY and similar actions evidencing completion of the Work. Specific requirements for individual units of Work are specified in other sections. Time of closeout is directly related to Substantial Completion, and therefore may be a single time period for whole Work or a series of time periods for individual parts of the Work that have been certified as substantially complete at different dates. The time variation, if any, shall be applicable to other provisions of this Section.

1.3 PREREQUISITES TO SUBSTANTIAL COMPLETION

- A. Prior to requesting Owner's inspection for Certificate of Substantial Completion, for either the whole Work or designated portions thereof, complete the following and list known exceptions in request:
 - 1. In Progress Payment request, coincide with, or first following date claimed, show 100% completion for portion of Work claimed as "Substantial Completed", or list incomplete items, values of incompleteness, and reasons for being incomplete.
 - 2. Include supporting documentation for completion as indicated in the Contract Documents.
 - 3. Submit statements showing accounting of changes to the Contract Sum.
 - 4. Advise COUNTY of pending insurance changeover requirements.
 - 5. Obtain and submit releases enabling COUNTY'S full and unrestricted use of the Work and access to services and utilities, including, where required, occupancy permits, operating certificates, and similar releases.
 - 6. Deliver tools, spare parts, extra stocks of materials, and similar physical items to COUNTY.
 - 7. Complete start-up testing of systems, and instructions of COUNTY'S operating-maintenance personnel. Discontinue, or change over, and remove from Project Site temporary facilities and services, along with construction tools and facilities, mock-ups, and similar elements.
- B. Cleaning and Repairs:

1. Immediately prior to the Owner's and Consultant's inspection for Substantial Completion of the whole Work or designated portions thereof, the Contractor shall completely clean the premises. Concrete surfaces shall be cleaned and washed. Sash, fixtures, and equipment shall be thoroughly cleaned. Stains, spots, dust, marks and smears shall be removed from all surfaces. Hardware and all metal surfaces shall be cleaned and polished. Glass and plastic surfaces shall be thoroughly cleaned by professional window cleaners. All damaged, broken or scratched glass or plastic shall be replaced by the Contractor at the Contractor's expense.
- C. Inspection Procedures:
1. Incomplete Items Prior to Substantial Completion:
 - a. One (1) week prior to Scheduled Date of Substantial Completion, the Contractor shall furnish the Owner a list of items, which the Contractor anticipates to be incomplete at the Date of Substantial Completion.
 - b. The Owner will review the list and confirm its acceptability, or itemize objections and transmit such to the Contractor for his action. Approval of this list by COUNTY will be a precondition for conducting the Substantial Completion inspection.
 2. Upon receipt of Contractor's request for inspection, the Owner and Consultant will either proceed with inspection or advise Contractor of prerequisites that are not fulfilled. Following initial inspection, the Consultant will either prepare the Certificate of Substantial Completion or advise Contractor of Work which must be performed prior to issuance of certificate. The Consultant will repeat inspection when requested and when assured that the Work has been substantially completed. Results of completed inspection will form initial "Punch List".
- D. Reinspection Procedures:
1. Following Substantial Completion of a designated portion, the Contractor shall correct or remedy all Punch List items to the satisfaction of the Owner and CONSULTANT within a thirty (30) calendar days after the Date of Substantial Completion of the designated portion. If subsequent inspections are necessary after the thirty (30) calendar day period in order to eliminate all deficiencies, the cost of all subsequent inspections with respect to Owner's and CONSULTANT time shall be paid by the Contractor. When ready, the Contractor shall request in writing a final inspection of the Work. If necessary, procedures will be repeated.

In the event of unacceptable Work discovered on the Final Inspection, payment shall be withheld until all Punch List items are corrected to the Owner's satisfaction.

1.4 PREREQUISITES FOR FINAL COMPLETION AND ACCEPTANCE

- A. Prior to requesting Owner's final inspection for certification of Final Completion and Acceptance as required by this Project Manual, complete the following and list known exceptions in requests:
1. Submit certified copy of Owner's and Consultant's final "Punch List" of itemized Work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and has been endorsed and dated by the Owner and the Consultant.
 2. Submit final meter readings for utilities, measured record of stored fuel, and similar data either as of time of Substantial Completion or when COUNTY took possession of and responsibility for corresponding elements of the Work.
 3. Touch-up and otherwise repair and restore marred exposed finishes.

1.5 PREREQUISITES TO FINAL PAYMENT

- A. Final Payment: Final Payment will be made after Final Completion and Acceptance of the whole Work by the COUNTY upon request by the Contractor on condition that the Contractor:
1. Acceptance and Final Payment: The Owner and Consultant will check the final estimate submitted by the Contractor of the items of Work actually performed. The Contractor shall approve the Owner's final estimate or advise the Owner of his/her objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the Contract as amended by Change Order. The Contractor and the Owner shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within thirty (30) calendar days of the Contractor's submission to the final estimates. If, after such thirty (30) day period, a dispute still exists, the Contractor may approve the Owner's estimate under protest of the portions of Work in dispute, and such disputed quantities shall be considered by the COUNTY as a claim in accordance with THE COUNTY CONTRACT.
 - a. After the Contractor has approved, or approved under protest, the Owner's final estimate, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the Contract. All prior progress payments shall be subject to correction in the final estimate and payment.
 2. Furnish properly executed final releases of lien (1 original each, 2 copies) from all material men and subcontractors who have furnished materials or labor for the Work and submit supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 3. Furnish Contractor's Affidavit of Release of Liens (1 original each, 2 copies) that all material men and subcontractors have been paid in full. In the event they have not been paid in full, the COUNTY shall retain a sufficient sum to pay them in full and at his option may make direct

payment as provided in Chapter 84, Florida Statutes, as amended, to obtain complete releases of lien.

4. Furnish Contractor's Affidavit of Debts and Claims, two (2) copies.
5. Furnish required sets of Record Documents and Project manual and maintenance and operating instructions.
6. Furnish guarantees signed by subcontractors, material suppliers, and countersigned by the Contractor for operating equipment.
7. Submit specific warranties, workmanship-maintenance bonds, maintenance agreements, final certifications and similar documents.
8. Furnish a signed guarantee, in form acceptable to Owner and agreeing to repair or replace as decided by the Owner and CONSULTANT all Work and materials that prove defective within one (1) year (or more) from the date of Final Completion and Acceptance, including restoration of all other Work damaged in making such repairs or replacements.
9. Furnish Consent of Surety to Final Payment (2 copies).
10. Submit updated final statement, accounting for final changes to Contract Sum.
11. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
12. Certify that all Social Security, Unemployment and all other taxes (City, State, Federal Government) have been paid.
13. Provide receipt as applicable, of affidavits certifying all labor standards of local, state, or federal requirements have been complied with by the Contractor.
14. Contractor's Final Application for Payment.

1.6 COMPLIANCES

- A. Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at site, or bury debris or excess materials on COUNTY'S property, or discharge volatile or other harmful or dangerous materials into drainage systems; remove waste materials from Site and dispose of in a lawful manner.
- B. Where extra materials of value remaining after completion of associated Work have become COUNTY'S property, dispose of these as directed by COUNTY.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01710 EXAMINATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Inspection of Conditions
- B. Acceptance of Conditions
- C. Existing Conditions

1.02 RELATED DOCUMENTS

- A. Section 01010: Summary of Work
- B. Section 01310: Project Management and Coordination.
- C. Section 01430: Quality Assurance
- D. Section 01450: Quality Control
- E. Section 01720: Preparation

1.03 INSPECTION OF CONDITIONS

- A. Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed.
- B. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Recheck and verify:
 - 1. The specific conditions and requirements described in individual specification sections and on the drawings.
 - 2. Measurements and dimensions, before starting each installation.
 - 3. That existing site conditions and substrate surfaces are acceptable for subsequent Work.
 - 4. That existing substrate is capable of structural attachment of new Work being applied or attached.

5. That utility services, including any required electrical, plumbing and other fixtures, components or service connections, are available, have the correct characteristics for the Work, and are in the correct location.

1.05 ACCEPTANCE OF CONDITIONS

- A. Beginning new Work means acceptance of existing conditions and substrates.

1.06 EXISTING CONDITIONS

- A. Conditions existing at time of Bidder's inspection will be maintained by Owner insofar as practicable.
- B. Variations of tree locations may occur by Owner's removal and salvage operations prior to start of the Work.
 1. Protect as necessary until Owner's removal.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01720 PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Protection of Adjacent Construction

1.02 RELATED DOCUMENTS

- A. Section 01560: Temporary Barriers and Enclosures
- B. Section 01740: Cleaning
- C. Section 01780: Closeout Submittals

1.03 PROTECTION AND MOVING OF FURNITURE AND EQUIPMENT

- A. Protect and move existing furniture and equipment as required elsewhere in the Contract Documents and as specified below and in Section 01710, Examination.

1.04 PROTECTION OF ADJACENT CONSTRUCTION

- A. Cleaning And Protection:

1. During handling and installation, clean and protect existing facilities, construction in progress and adjoining materials in place.
2. Apply protective covering where required to ensure protection from damage or deterioration.
3. Adjust and lubricate operable components to ensure operability without damaging effects.

- B. Limiting Exposures:

1. Take precautions and supervise construction activities to ensure that adjacent properties are not subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.
2. Where applicable, such exposures include, but are not limited to, the following construction related elements:
 - a. Excessive static or dynamic loading.
 - b. Excessive internal or external pressures.
 - c. Excessively high or low temperatures.

- d. Thermal shock.
- e. Excessively high humidity.
- f. Air contamination or pollution.
- g. Water.
- h. Solvents.
- i. Chemicals.
- j. Light.
- k. Radiation.
- l. Puncture.
- m. Abrasion.
- n. Heavy traffic.
- o. Soiling, staining and corrosion.
- p. Bacteria.
- q. Rodent and insect infestation.
- r. Combustion.
- s. Electrical current.
- t. High speed operation.
- u. Improper lubrication.
- v. Unusual wear or other misuse.
- w. Contact between incompatible materials.
- x. Destructive testing.
- y. Misalignment.
- z. Excessive weathering.
- aa. Unprotected storage.
- bb. Improper shipping or handling.

cc. Theft.

dd. Vandalism.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.01 PREPARATION

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

END OF SECTION

SECTION 01730 EXECUTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Application and Installation
- B. Cutting and Patching

1.02 RELATED DOCUMENTS

- A. Section 01560: Temporary Barriers and Enclosures
- B. Section 01720: Preparation
- C. Section 01740: Cleaning
- D. Section 01780: Closeout Submittals.
- E. Individual Product Specification Sections:
 - 1. Cutting and patching incidental to work of the section.
 - 2. Advance notification to construction entities of openings required in Work of those sections.
 - 3. Limitations on cutting structural members and fire rated assemblies.

1.03 SUBMITTALS

- A. Cutting and Patching Proposal:
 - 1. Submit a proposal for the Project Consultant's and Owner's approval well in advance of the time cutting and patching will be performed and request approval to proceed where:
 - a. Individual specification sections require approval of procedures for cutting and patching before proceeding.
 - b. Cutting and patching will affect:
 - 1) Structural integrity of any element of Project.
 - 2) Integrity of weather exposed or moisture resistant element.
 - 3) Efficiency, maintenance, or safety of any operational element.
 - 4) Visual qualities of sight exposed elements.

- 5) Work of Owner or separate Contractor.
2. Include the following information, as applicable, in the proposal:
 - a. Identification of Project.
 - b. Location and description of affected Work.
 - c. Necessity for cutting or alteration: Describe the extent of cutting and patching required and how it is to be performed; indicate why it cannot be avoided.
 - d. Description of proposed Work and Products to be used: List products to be used and firms or entities that will perform Work.
 - e. Alternatives to cutting and patching.
 - f. Effect on the Work, the work of the Owner or separate Contractors:
 - 1) Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
 - 2) List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
 - g. Written permission of affected separate contractor.
 - h. Date and time when cutting and patching will be executed.
 3. Approval by the Project Consultant and Owner to proceed with cutting and patching does not waive the Project Consultant's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.
 - A. Selective Demolition:
 1. Include coordination for shut-off, capping, continuation of utility services as required, together with details dust noise control protection.
 2. Coordinate with Owner's continuing occupation of portions of existing building and with Owner's partial occupancy of completed new addition, alteration, renovation.
 - C. Project Record Documents: Accurately record actual locations of capped utilities, subsurface obstructions, and unanticipated structural, mechanical and electrical elements uncovered during demolition and submit under provisions of Section 01780: Closeout Submittals.

1.04 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.
- B. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
1. Lintels.
 2. Timber and primary wood framing.
 3. Structural decking.
 4. Miscellaneous structural metals.
 5. Equipment supports.
 6. Piping, ductwork, vessels and equipment.
- C. Operational and Safety Limitations:
1. Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.
 2. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
 - a. Shoring, bracing, and sheeting.
 - b. Primary operational systems and equipment.
 - c. Air or smoke barriers.
 - d. Water, moisture, or vapor barriers.
 - e. Membranes and flashings.
 - f. Fire protection systems.
 - g. Noise and vibration control elements and systems.
 - h. Control systems.
 - i. Communication systems.
 - j. Electrical wiring systems.
- D. Visual Requirements:

- 1 Remove and replace Work cut and patched in a visually unsatisfactory manner.
- 2 If possible retain the original installer or fabricator to cut and patch the following categories of exposed Work, or if it is not possible to engage the original installer or fabricator, engage another recognized experienced and specialized firm:
 - a. Acoustical ceilings.
 - b. HVAC enclosures, cabinets or covers.

1.05 APPLICATION AND INSTALLATION

- A. Materials and workmanship: Conform to the requirements of the contract documents with respect to the parts or kinds of work included.
- B. Provide attachment and connection devices and methods necessary for securing Work. Secure Work and products true to line and level. Allow for expansion and building movement.
- C. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Project Consultant for final decision.
- D. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- E. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- F. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Project Consultant for final decision.

1.06 ERECTION

- A. Erect structural and other building elements within the dimensional tolerances and other requirements as specified in the respective specification sections of Divisions 2 through 16.

1.07 PROTECTION OF ADJACENT PROPERTY

- A. Cleaning And Protection:
 1. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
 2. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.01 INSPECTION

- A. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.
- B. Before proceeding, meet at the site with parties involved in cutting and patching, including mechanical and electrical trades.
- C. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.02 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection:
 - 1. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining properties or interruption of free passage to adjoining properties.
- D. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.03 CUTTING AND PATCHING

- A. General:
 - 1. Employ skilled workmen to perform cutting and patching.
- B. Cutting:
 - 1. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.
 - a. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping.

- b. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces.
- c. Temporarily cover openings when not in use.
- d. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
- e. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.
- f. Comply with requirements of applicable Sections of Division-2 where cutting and patching requires excavating and backfilling.

By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned:

2. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

D. Patching:

1. Patch with durable seams that are as invisible as possible. Comply with tolerances specified for the same or similar Work in Divisions 2 through 16.
2. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

E. Cleaning:

1. Thoroughly clean areas where cutting and patching is performed or used as access.
2. Remove completely paint, mortar, oils, putty and items of similar nature.
3. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied.
4. Restore damaged pipe covering to its original condition.

3.02 DEMOLITION

1. Pending receipt of directive from Owner, rearrange selective demolition schedule as necessary to continue overall job progress without delay.

A. Disposal Of Demolished Materials:

1. Remove debris, rubbish other materials resulting from selective demolition operations from site as required by Section 01740, Cleaning and other provisions of the Contract Documents.

2. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, ordinances concerning removal, handling and protection against exposure or environmental pollution.
 3. Burning of removed materials will not be permitted on project site.
- E. Clean Up And Repair Of Selectively Demolished areas:
1. Upon completion of selective demolition work, remove tools, equipment, demolished materials from site. Remove protections, leave interior areas broom clean.
 2. Repair demolition performed in excess of that required.
 3. Return damaged structures, surfaces to remain to condition existing prior to commencement of selective demolition work.

END OF SECTION

SECTION 01740 CLEANING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Final Cleaning
- B. Progress Cleaning
- C. Site Maintenance

1.02 RELATED DOCUMENTS

- A. Document BCF 170: Form of Agreement
- B. Section 01350: Special Procedures
- C. Section 01410: Regulatory Requirements
- D. Section 01520: Construction Facilities
- E. Section 01570: Temporary Controls
- F. Specification Sections Division 2 through 27: Cleaning for specific products or elements of the Work.

1.03 GENERAL REQUIREMENTS

- A. Maintain premises free from accumulations of waste, debris, and rubbish, caused by operations.
- B. At completion of Work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave project clean and ready for occupancy.
- C. Maintain site by mowing, weeding and other landscape maintenance operations to ensure continued healthy viability/life of plant materials and to comply with municipal zoning and other ordinances and other applicable jurisdictional requirements concerning lawn and site maintenance.

1.04 QUALITY ASSURANCE

- A. Cleaning:
 - 1. Employ experienced workers or professional cleaners for final cleaning.

2. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program.
3. Comply with manufacturer's instructions:
 - a. Use only those cleaning methods recommended by manufacturer of the surface materials to be cleaned.
 - b. Use cleaning materials only on surfaces recommended by manufacturer of the surface materials to be cleaned.

1.05 SAFETY REQUIREMENTS

- A. Standards: Maintain Project in accord with safety and Insurance standards.
- B. Hazards Control:
 1. Do not utilize volatile or noxious substances without approval of Project Consultant.
 2. Maintain proper ventilation when using cleansing agents and other chemicals.
- C. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 1. Do not burn or bury rubbish and waste materials on project site.
 2. Do not dispose of volatile wastes such as mineral spirits, oils, or paint thinner in storm or sanitary drains.
 3. Do not dispose of any wastes into canals, streams or waterways.

1.06 COLLECTION AND DISPOSAL REQUIREMENTS

- A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.
- B. Utilize waste disposal franchise specified by municipal jurisdictional authority if required in the municipality in which the project site is located.
- C. Collect waste from construction areas and elsewhere daily:
 1. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly.
 2. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by properly containerizing and appropriately ventilating.
 3. Dispose of material in a lawful manner.

1.07 PEST CONTROL

- A. Engage exterminator to make final eradication of rodents, insects and other pests as specified in Section 01570, Temporary Controls.
- B. Repeat final treatments as necessary until Owner occupancy to ensure rodent, insect and pest free facilities.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Use only cleaning materials recommended by product manufacturer suitable for surface to be cleaned.

PART 3 EXECUTION

3.01 DURING CONSTRUCTION

- A. Execute cleaning to ensure that site and grounds, private and public properties adjacent to site are maintained free from accumulations of waste materials and rubbish.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- C. Each day during progress of Work, clean immediate work site and adjacent areas, and dispose of project related waste materials, debris and rubbish.
- D. Remove waste materials, debris and rubbish from site and legally dispose of at public or private dumping areas off Owner's property. Coordinate with municipality's franchise as specified above.
- E. Vacuum clean interior of building areas:
 - 1. When surfaces are ready to receive painting.
 - 2. Prior to the installation of finish flooring materials.
 - 3. Prior to application or installation of materials, finishes or equipment which would be degraded by dust or dirt.
 - 4. On an as-needed basis to maintain clean work areas through substantial and final completion.
- F. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.
- G. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.

3.02 CLEANING PRIOR TO SUBSTANTIAL COMPLETION

- A. Conduct inspection of sight-exposed interior and exterior surfaces and concealed spaces: Ensure clean condition and removal of debris.
- B. Complete the following cleaning operations before requesting Substantial Completion Inspection:
 - 1. Remove labels that are not permanent labels.
 - 2. Clean transparent materials, including mirrors and glass in doors and windows.
 - a. Remove glazing compound and other substances that are noticeable vision-obscuring materials.
 - b. Replace chipped or broken glass and other damaged transparent materials.
 - 3. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances:
 - a. Restore reflective surfaces to their original reflective condition.
 - b. Leave concrete floors broom clean.
 - 5. Vacuum carpeted and other “soft” finished surfaces:
 - a. Remove and repair stains, discolorations, abrasions, cuts or other damage.
 - b. Do not “spot patch” sheet or roll products unless approved by the Project Consultant and Owner.
 - 4. Wipe surfaces of mechanical and electrical equipment:
 - a. Remove excess lubrication and other substances.
 - b. Clean plumbing fixtures to a sanitary condition.
 - c. Clean light fixtures and lamps, including reflectors, bulbs and diffusers.
 - 5. Clean ducts, blowers, coils, diffusers and other elements of air conditioning systems.
 - 6. Replace air conditioning filters.
 - 7. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances:
 - a. Sweep paved areas broom clean; remove stains, spills and other foreign deposits.
 - b. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

3.03 FINAL CLEANING

A. Site amenities and manufactured items:

1. In preparation for final completion or occupancy, conduct final inspection of sight-exposed exterior surfaces.
2. Remove grease, dust, dirt, stains, label, fingerprints, and other foreign materials, from sight-exposed exterior finished surfaces.
3. Repair, patch and touch up marred surfaces to specified finish, to match adjacent surfaces.

B. Broom clean paved surfaces adjacent to playground; rake clean other surfaces of grounds adjacent to playgrounds.

C. Maintain cleaning until Owner occupancy.

END OF SECTION

SECTION 01750 STARTING AND ADJUSTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Starting systems.
- B. Demonstration And Instructions.
- C. Testing, Adjusting, And Balancing.
- D. Building Commissioning.

1.02 RELATED DOCUMENTS

- A. Section 01320: Construction Progress Documentation
- B. Section 01430: Quality Assurance
- C. Section 01450: Quality Control
- D. Section 01770: Close-out Procedures
- E. Section 01780: Close-out Submittals

1.03 STARTING SYSTEMS

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

- H. Submit a written report in accordance with Section 01310, Construction Progress Documentation that equipment or system has been properly installed and is functioning correctly.

1.04 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of systems, assemblies, equipment and products to Owner's personnel as required under provisions of Section 01820, Demonstration and Training.

1.05 TESTING, ADJUSTING, AND BALANCING

- A. The Owner will appoint, employ, and pay for services of an independent test and balance consultant to perform observe construction, verify the Work, and perform other services related to HVAC systems in accordance with Section 23 05 93 – Testing, Adjusting and Balancing.
- B. Cooperate and facilitate the operations of the Owner's Test and Balance Consultant.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01760 PROTECTION OF INSTALLED CONSTRUCTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Protection of Installed Construction

1.02 RELATED DOCUMENTS

- A. Section 01560: Temporary Barriers and Enclosures
- B. Section 01720: Preparation
- C. Section 01740: Cleaning

1.03 GENERAL REQUIREMENTS

- A. Cleaning And Protection:

1. During handling and installation, clean and protect construction in progress and adjoining materials in place.
2. Apply protective covering where required to ensure protection from damage or deterioration until Owner occupancy.
3. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period under provisions of Section 01740, Cleaning.
4. Adjust and lubricate operable components to ensure operability without damaging effects.

- B. Limiting Exposures:

1. Take precautions and supervise construction activities to ensure that no part of the construction in progress or completed are subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.
2. Where applicable, such exposures include, but are not limited to, the following construction related elements:
 - a. Excessive static or dynamic loading.
 - b. Excessive internal or external pressures.
 - c. Excessively high or low temperatures.
 - d. Thermal shock.

- e. Excessively high humidity.
- f. Air contamination or pollution.
- g. Water.
- h. Solvents.
- i. Chemicals.
- j. Light.
- k. Radiation.
- l. Puncture.
- m. Abrasion.
- n. Heavy traffic.
- o. Soiling, staining and corrosion.
- p. Bacteria.
- q. Rodent and insect infestation.
- r. Combustion.
- s. Electrical current.
- t. High speed operation.
- u. Improper lubrication.
- v. Unusual wear or other misuse.
- w. Contact between incompatible materials.
- x. Destructive testing.
- y. Misalignment.
- z. Excessive weathering.
- aa. Unprotected storage.
- bb. Improper shipping or handling.
- cc. Theft.

dd. Vandalism.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 PREPARATION

- A. Cover, protect finished building surfaces (walls, floors, ceilings, etc.), furniture, equipment and fixtures to remain from soiling or damage when selective demolition work and other construction activities are performed in rooms which contain new elements of construction.
- B. Erect, maintain dust-proof partitions and other closures as required to prevent spread of dust or fumes to portions of the building containing new construction.

3.02 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in respective Sections of Divisions 1 through 16.
- B. Provide temporary and removable protection for installed products.
- C. Control traffic in immediate area of installed Work to minimize damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs and other finished surfaces with durable sheet materials to protect from traffic, dirt, wear, damage, or movement of heavy objects.
- F. Prohibit traffic and storage on waterproofed or roofed surfaces. If traffic or activity on such surfaces is necessary, obtain recommendation from waterproofing or roofing manufacturer and provide protection accordingly.
- G. Prohibit traffic on lawn and landscaped areas.
- H. Do not allow wheeled or tracked vehicles on surfaces or areas not designed for their support or which will be otherwise damaged.

END OF SECTION

SECTION 01770 CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 PRELIMINARY PROCEDURES

- A. If the date required for Substantial Completion has past or cannot otherwise be met by the Contractor, the Contractor shall submit:
 - 1. A request for time extension if the required date of Substantial Completion stipulated by the Contract Documents (or as modified by a COUNTY approved Change Order allowing a change in Contract Time) has past.
 - 2. Provide complete details and attach substantiating evidence concerning reasons for requested Time extension.
 - 3. Format: Submit request for time extension with associated detail sheets.
- B. Before requesting inspection for certification of Substantial Completion, complete the following:
 - 1. All air conditioning, ventilation, security systems, fire alarms, fire sprinklers and other life safety systems and building systems must be completed, tested, approved and demonstrated.
 - 2. Air Conditioning systems must be completed, tested, approved and demonstrated and test and balance reports submitted and approved by the Consultant and Contract Administrator as required in Section 15990 - Start-up and Certification of Air, Water and Control Systems.
 - 3. Landscape irrigation systems must be completed, tested, approved and demonstrated.
 - 4. Master and grand master keys must be delivered in sealed containers to the Contract Administrator.
 - 5. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - 6. Advise Contract Administrator of pending insurance change-over requirements.
 - 7. Prepare specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents for submittal under provisions of Section 01780, Closeout Submittals.

8. Obtain and submit releases enabling the Contract Administrator unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
9. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information under provisions of Section 01780, Closeout Submittals.
10. Deliver tools, spare parts, extra stock, and similar items as specified in respective specification sections of Divisions 2 through 16 and in Section 017800, Closeout Submittals.
11. Make final change-over of permanent locks and transmit master and grand master keys to the Contract Administrator.
12. Advise the Contract Administrator's personnel of pending change-over in security provisions.
13. Complete start-up testing of systems, and instruction of the COUNTY's operating and maintenance personnel.
14. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
15. Complete final clean up requirements, including touch-up painting.
16. Touch-up and otherwise repair and restore marred exposed finishes.
17. Obtaining a Certificate of Occupancy (or, with prior written approval from the Contract Administrator, a Temporary Certificate of Occupancy (TCO)) from the Building Department having jurisdiction over the project.

1.02 CONTRACTOR'S REQUEST FOR INSPECTION

- A. When the Contractor considers that the Work, or a portion thereof which the Contract Administrator agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Consultant a Request for Substantial Completion Inspection including a comprehensive list of items to be completed or corrected.
- B. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.
- C. Project Closeout Submittals: Project closeout submittals required by the Contract Documents for the Work, or a portion thereof, shall be submitted by the Contractor at or prior to the time of his request.

1.03 CONSULTANT'S DETERMINATION OF READINESS

- A. Upon receipt of the Contractor's Request for Substantial Completion Inspection, the Consultant will make a preliminary inspection to determine whether the Work or designated portion thereof is appropriately ready for a Substantial Completion Inspection.
- B. The Consultant will notify the Contract Administrator and the Contractor of the results of his inspection by completing and distributing the Consultant's Notification of Readiness for Substantial Completion Inspection.
 - 1. If the Consultant's inspection discloses any item, whether or not included on the Contractor's list, which is not in accordance with the requirements of the Contract Documents and which would preclude beneficial occupancy and would render the Work not Substantially Complete, the Contractor shall correct such item upon receipt of the Consultant's Notification. The Contractor shall then submit another request for inspection by the Consultant to determine the completion status of the Work or designated portion thereof.
 - 2. When the Consultant judges that the Project may be substantially complete in accordance with the terms of the Contract Documents, he will notify the Contract Administrator that the Work, or portion thereof, is ready for the Contract Administrator's Substantial Completion Inspection.

1.04 SUBSTANTIAL COMPLETION INSPECTION

- A. The Contract Administrator, upon notification from the Consultant that the Work, or a portion thereof, may be substantially complete and all project closeout submittals pertaining to the Work, or portion thereof, have been approved and forwarded to the Contract Administrator, will direct the Consultant to schedule and coordinate the Contract Administrator's Substantial Completion Inspection.
- B. The Contract Administrator's Substantial Completion Inspection will be conducted by the Consultant, the Contract Administrator, and the Contractor.
- C. The following representatives shall attend and conduct the Substantial Completion Inspection:
 - 1. Contractor Personnel:
 - a. Project Manager
 - b. Superintendent
 - c. Plumbing Superintendent
 - d. Mechanical Superintendent
 - e. Electrical Superintendent
 - f. Specialty Sub-Contractors.
 - 2. Contract Administrator Personnel:
 - a. Project Manager
 - b. Field Construction Personnel and/or Supervisors
 - c. Contract Administrator's Professional Staff
 - d. Contract Administrator's Test and Balance Consultant (as applicable)
 - e. Commissioning Agent (as applicable)

- f. Other specialty representatives of the Contract Administrator.
3. Consultant Personnel
 - a. Architectural Project Manager
 - b. Architectural Special Project Representative/Field Representative
 - c. Structural Engineer
 - d. Mechanical Engineer
 - e. Electrical Engineer
 - f. Specialty Sub-Consultants
- D. Inspection Teams:
1. At the direction of the Consultant's senior representative, inspection teams will be established at the project site based upon the following disciplines:
 - a. Architectural/Civil
 - b. Plumbing
 - c. Mechanical
 - d. Electrical
 - e. Electronics
 - f. Specialties
 2. Each inspection teams will be composed of specialty representatives of the Contract Administrator, Consultant and Contractor who will perform independently of each other.
 3. Each team will appoint a Team Leader.
 4. The Consultant's senior representative will provide each Team Leader with:
 - a. Copy of the Contractor's List of Deficiencies
 - b. Floor and site plans (with the remainder of the Contract Documents available to the team).
- E. At the Completion of the Substantial Completion Inspection, the Consultant will issue a Substantial Completion Inspection report and Substantial Completion Punch List. Contract Administrator shall either approve or deny substantial completion of the Work, or portion thereof.
- F. If Substantial Completion of the Work, or portion thereof, is denied, the Contractor shall promptly correct deficiencies noted which caused the denial of substantial completion. Upon correcting these deficiencies, the Contractor shall notify the Consultant that these deficiencies are ready for re-inspection by submitting a new Request for Substantial Completion at which time the Consultant, Contract Administrator, and Contractor will re-conduct the Contract Administrator's Substantial Completion Inspection for substantial completion deficiencies only.
- G. When Substantial Completion of the Work, or portion thereof, is granted, the Consultant will prepare and issue Contract Administrator's Form 1, Certificate of Substantial Completion to indicate the date of substantial completion.

1.05 READINESS FOR FINAL COMPLETION (ACCEPTANCE) INSPECTION

- A. Deficiencies noted on or attached to Substantial Completion Inspection Report and Substantial Completion Inspection Punch List, must be completed prior to the Contract Administrator's Final Completion Inspection. Limitations on the Time during which these corrections must be made shall be consistent with the Time specified in the Contract.
- B. Upon correction of the punch list, the Contractor shall notify the Consultant and issue a Request for Final Completion Inspection, that the Work, or portion thereof is ready for the Contract Administrator's Final Completion Inspection.
- C. Upon receipt of the Contractor's Request for Final Completion Inspection, the Consultant will make an inspection to determine whether the Work or designated portion thereof is complete. The Consultant will notify the Contract Administrator and the Contractor of the results of his inspection by completing and distributing the Consultant's Notification of Readiness for Final Completion Inspection.
 - 1. If the Consultant's inspection discloses any item which is not in accordance with the requirements of the Contract Documents and which would render the Work not complete, the Contractor shall correct such item upon receipt of the Consultant's Notification of Readiness for Final Completion Inspection. The Contractor shall then submit another request for inspection by the Consultant to determine the completion status of the Work or designated portion thereof.
 - 2. When the Consultant judges that the Project is complete in accordance with the terms of the Contract Documents, he will notify the Contract Administrator that the Work, or portion thereof, is ready for the Contract Administrator's Final Completion Inspection.

1.06 CONTRACT ADMINISTRATOR'S FINAL COMPLETION INSPECTION

- A. The Contract Administrator, upon notification from the Consultant that the Work, or a portion thereof, is complete will direct the Consultant to schedule and coordinate the Contract Administrator's Final Completion Inspection.
- B. The Contract Administrator's Final Completion Inspection will be conducted by the Consultant, the Contract Administrator, and the Contractor.
 - 1. Members of the inspection teams which inspected the facility for Substantial Completion will reconvene to conduct the Final Completion Inspection.
 - 2. Members of the inspection teams for which there are no outstanding Punch List Items may be excused upon request to and approval by the Consultant.
- C. If Final Completion of the Work, or portion thereof, is denied, the Contractor shall promptly correct deficiencies noted which caused the denial of final completion.
- D. Upon correcting these deficiencies, the Contractor shall notify the Consultant that these deficiencies are ready for re-inspection (by submitting a new Contractor's Request for Final Completion Inspection at which time the Consultant, Contract Administrator, and Contractor will re-conduct the Contract Administrator's Final Completion Inspection.

1.07 FINAL COMPLETION DATE

- A. When Final Completion of the Work, or portion thereof, is granted, the Consultant will issue the Consultant's Letter Establishing Final Completion Date to indicate the date of final completion.
- B. Upon receipt of Consultant's Letter Establishing Final Completion Date, the Contractor may make application for final payment.
- C. If correction of Punch List is not fully completed within a period twice as long as that allowed by the Contract Documents, the Contract Administrator, at his option, may close out the Work or designated portion thereof, by deducting his estimate of the cost to correct the outstanding items and complete with Work by a separate contractor or the Contract Administrator's own forces.

1.08 OCCUPANCY INSPECTION

- A. The Municipal or County Building Departments having jurisdiction will conduct an inspection for the purpose of determining that the Work, or portion thereof, is in compliance with the statutes, rules, and codes affecting the health and safety of the occupants.
- B. Upon successful completion of this inspection, the jurisdictional Building Department will issue a Certificate of Occupancy authorizing occupancy of the Work, or portion thereof.
 - 1. The Contractor shall be responsible for corrections to discrepancies noted by the jurisdictional Building Department during the Occupancy Inspection, except for items identified which are not part of the requirements of the Contract Documents.
 - 2. Corrections to identified discrepancies which are not part of the requirements of the Contract Documents will be made by the Contract Administrator using his own forces or separate contractor(s), or by the Contractor after execution of a change order instructing the Contractor to complete such Work.
- C. Obtaining a Certificate of Occupancy from the Jurisdictional Building Department is a prerequisite to the Contractor achieving Substantial Completion.

1.09 FINAL ADJUSTMENTS OF ACCOUNTS

- A. Submit a final statement of accounting to the Consultant.
- B. Statement shall reflect all adjustments to the Contract Sum:
 - 1. The original Contract Sum.
 - 2. Additions and deductions resulting from:
 - a. Previous Change Orders.
 - b. Deductions for uncorrected work.
 - c. Deductions for liquidated damages.

- d. Deductions for re-inspection payments.
- e. Other adjustments.
- 3. Total Contract Sum, as adjusted.
- 4. Previous payments.
- 5. Sum remaining due.
- 6. The applicable Purchase Order Number issued by the Contract Administrator.

1.10 FINAL APPLICATION FOR PAYMENT

- A. Submit the final Application for Payment in accordance with procedure and requirements stated in the Contractor's agreement with the COUNTY.

1.11 REINSPECTION FEES

- A. Should it be necessary for the Consultant to perform re-inspections due to the failure of the Work to comply with the claims of status of completion made by the Contractor:
 - 1. The Contract Administrator will compensate the Consultant for such additional services.
 - 2. Contract Administrator will deduct the amount of such compensation from the Contract Sum due to the Contractor.

1.12 PUNCH LIST COMPLETION

- A. The facilities may be occupied by COUNTY during completion of all or a portion of the Punch List.
- B. Complete Punch List work during the COUNTY's normal hours of operation (8:30 AM to 5:00 PM Monday through Friday).
- C. Make arrangements concerning access and other than normal work hours with the Contract Administrator.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION



Document 01770a: Contractor's Request for Substantial Completion Inspection

To:
 (Project Consultant)

Project No:
 Project Title:
 Facility Name:

Request No.: _____ **Date:** _____

Full Project

Designated Portion (Attach Description)

I hereby certify that I am an officer of the firm or corporation named herein and have been properly authorized to make the following statements concerning the project named above:

1. The above named project or designated portion thereof will be substantially complete in accordance with the contract requirements and ready (excluding the attached list of deficiencies) for inspection on:
 _____,

2. The Date of Substantial Completion required by the Contract (as modified by any approved change orders affecting Contract Time) is:
 _____,

3. I understand that I am to continue with builder's risk insurance coverage required by the Contract until the Date of Substantial Completion is agreed upon by the parties to the Contract. Additionally, I understand that I am to continue with liability coverage and maintenance required by the Contract until the Owner's Final Acceptance of the Work.

4. I have assembled and attached complete sets of Operations and Maintenance Manuals and other required closeout documents along with my Contractor's List of Deficiencies that will not preclude Substantial Completion. I have also attached my Time Extension Request for any delays related to this portion of the Work.

Submitted By:
 Company Name &
 Address:

 Phone:

 Signature

 Title

Distribution
 Project Consultant
 Field Construction Manager
 Contractor's Surety

Attachments:
 Contractor's List of Deficiencies
 Applicable Closeout Documents
 Time Extension Request (if applicable)

Notice to Contractor

Submit this form at least 10 calendar days prior to the requested inspection date to allow scheduling of the inspection.

Neither the determination by the Project Consultant that the Work is substantially complete, nor the acceptance thereof by the Owner, shall preclude subsequent claims against the Owner pursuant to portions of the Work not meeting the requirements of the Contract or for the Contract's provisions for the Contractor's warranty of the Work.



Notification of Readiness for Substantial Completion Inspection

Instructions for Project Consultant's Use: Provide this completed letter to notify the Owner that the Work, or a designated portion thereof, is ready for the Owner's Substantial Completion Inspection.

To:

(Field Construction Manager)

Project No:

Project Title:

Facility Name:

Contractor:

Contractor's Request No.: _____ **Date:** _____

Full Project

Designated Portion (Attach Description)

I have completed a preliminary site visit as a result of the Contractor's Request for Substantial Completion Inspection and have found that:

The work, or designated portion thereof, will be ready to receive a Substantial Completion Inspection as requested by the Contractor on:

The work, or designated portion thereof, is not ready to receive a Substantial Completion Inspection. A listing of items which preclude Substantial Completion is attached to this letter.

Submitted By:

(Project Consultant)

Company Name &

Address:

Phone:

_____ Signature

_____ Title

Distribution

- Director of Construction Management
- Project Manager
- County Architect
- Project File

Attachments:

Contractor's List of Deficiencies



Substantial Completion Inspection

Project No:
 Project Title:
 Facility Name:
 Contractor:

Inspection Date:
 Full Project
 Designated Portion (Attach Description)

Representation: _____ **Phone:** _____
 Contractor: _____
 Consultant: _____
 Using Agency: _____
 Construction Mgmt Div.: _____
 Others: _____

The attached pages 2 through _____ list "punch items" noted as a result of the Substantial Completion Inspection, completed by the persons listed above.

- The punch list items are of a nature that **will allow** beneficial occupancy of the premises and are issued as a final punch list. If any item on the preliminary punch list is inaccurate, notify the Construction Management Division's Project Manager immediately. These punch list items shall be corrected on or before the mutually agreed date of: _____.
- The punch list items are of a nature that preclude beneficial occupancy of the premises by the County and **Substantial Completion is denied at this time**. Items on the attached page 2 must be completed prior to requesting a re-inspection.

Remarks:

Recommended By:
 (Consultant)

Signature

Title

(Firm Name)

Approved By:

Signature

Title

Broward County Construction Management Division

Accepted By:

(Consultant)

Signature

Title

(Firm Name)

Distribution

Contractor, Consultant, Construction Management Division



Letter Establishing Substantial Completion Date

Instructions for Project Consultant's Use: Provide this completed letter to establish the Date of Substantial Completion of the Work or a designated portion thereof.

To:

(Contract Administrator)

Project No:
 Project Title:
 Facility Name:
 Contractor:

Contractor's Request No.: _____ **Date:** _____

Full Project

Designated Portion (Attach Description)

On _____, we completed the Substantial Completion Inspection for the project, or designated portion thereof, listed above.

I hereby certify that the General Contractor achieved Substantial Completion and the project, or designated portion thereof, was ready for beneficial occupancy on the following date:

The date of Substantial Completion is the last date of Substantial Completion for this project, or a designated portion thereof, requested by the Contractor pursuant to the request number listed above. Evidence is provided by our signatures below that the Project Consultant and Contractor agree that this project was ready for Beneficial Occupancy by the Owner for its intended purpose on the date of Substantial Completion listed above. You are advised to submit Standard Form 770 to advise Risk Management and Safety of the required change of insurance for this completed portion of the Work.

By:
 (Project Consultant) _____
 Firm Name _____

By:
 (Contractor) _____
 Firm Name _____

Distribution

- Director of Construction Management
- Contract Administrator
- Project Manager
- Consultant
- Contractor
- Contractor Surety

For Construction Management Division Use Only

Date is acceptable; letter is hereby placed in Project Files as an official record.

Project Manager



Contractor's Request for Final Completion Inspection

To:
 (Project Consultant)

Project No:
 Project Title:
 Facility Name:

Request No.: _____	Date: _____
<input type="checkbox"/> Full Project	
<input type="checkbox"/> Designated Portion (Attach Description)	

I hereby certify that I am an officer of the firm or corporation named herein and have been properly authorized to make the following statements concerning the project named above:

1. The above named project or designated portion thereof will be finally complete in accordance with the contract requirements and ready (including all punch list items) for inspection on:
 _____,

2. The Date of Final Completion required by the Contract (as modified by any approved change orders affecting Contract Time) is:
 _____,

3. I understand that I am to continue with insurance coverage and maintenance required by the Contract until the Owner's Final Acceptance of the Work. Additionally, I understand that I am to continue with liability coverage and maintenance required by the Contract until the Owner's Final Acceptance of the Work.

4. I have attached a time extension request/change order proposal for any delays related to work required for completion of the punch list.

Submitted By:
 Company Name &
 Address:

 Phone:

 Signature

 Title

Distribution
 Project Consultant
 Field Construction Manager
 Contractor's Surety

Attachments:
 Time Extension Request/Change Order Proposal
 (if applicable)

Notice to Contractor

Neither the determination by the Project Consultant that the Work is finally complete, nor the acceptance thereof by the Owner, shall preclude subsequent claims against the Owner pursuant to portions of the Work not meeting the requirements of the Contract or for the Contract's provisions for the Contractor's warranty of the Work.



Notification of Readiness for Final Completion Inspection

Instructions for Project Consultant's Use: Provide this completed letter to notify the Owner that the Work, or a designated portion thereof, is ready for the Owner's Final Completion Inspection.

To:

(Field Construction
 Manager)

Project No:

Project Title:

Facility Name:

Contractor:

**Contractor's
Request No.:** _____ **Date:** _____

Full Project

Designated Portion (Attach Description)

I have completed a preliminary site visit as a result of the Contractor's Request for Final Completion Inspection and have found that:

The work, or designated portion thereof, will be ready to receive a Final Completion Inspection as requested by the Contractor on:

The work, or designated portion thereof, is not ready to receive a Final Completion Inspection. A listing of items which preclude Final Completion is attached to this letter.

Submitted By:

(Project Consultant)

Company Name &

Address:

Phone:

_____ Signature

_____ Title

Distribution

- Director of Construction Management
- Project Manager
- County Architect
- Project File

Attachments:

- Contractor's List of Deficiencies



Letter Establishing Final Completion Date

Instructions for Project Consultant's Use: Provide this completed letter to establish the Date of Final Completion of the Work or a designated portion thereof.

To:

(Contract Administrator)

Project No:
 Project Title:
 Facility Name:
 Contractor:

<p>Contractor's Request No.: _____ Date: _____</p> <p><input type="checkbox"/> Full Project</p> <p><input type="checkbox"/> Designated Portion (Attach Description)</p>

On _____, we completed the Final Completion Inspection for the project, or designated portion thereof, listed above.

I hereby certify that the General Contractor achieved Final Completion and the project, or designated portion thereof, was ready for beneficial occupancy on the following date:

The date of Final Completion is the last date of Final Completion for this project, or designated portion thereof, originally requested by the Contractor. Evidence is provided by our signatures below that the Project Consultant and Contractor agree that this project was Finally Complete on the date of Final Completion listed above.

By:
 (Project Consultant) _____
 Firm Name _____

By:
 (Contractor) _____
 Firm Name _____

Distribution

- Director of Construction Management
- Contract Administrator
- Project Manager
- Consultant
- Contractor
- Contractor Surety

<p>For Construction Management Division Use Only</p> <p><input type="checkbox"/> Date is acceptable; letter is hereby placed in Project Files as an official record.</p> <p style="text-align: right;">_____ Project Manager</p>

SECTION 01780 CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Final Site Survey
- B. Maintenance Contracts
- C. Operation and Maintenance Data
- D. Maintenance Materials
- E. Product Warranties
- F. Product Bonds
- G. Project Record Documents
- H. Spare Parts
- I. Electronic Media
- J. Miscellaneous Schedules

1.02 RELATED DOCUMENTS

- A. Document BCF 170: Form of Agreement
- B. Section 01330: Submittal Procedures
- C. Section 01770: Closeout Procedures
- D. Section 01820: Demonstration and Training
- E. Related requirements specified in respective specification Sections of Divisions 2 through 16.

1.03 SUBMITTALS

- A. Project closeout submittals required by the Contract Documents for the Work, or a portion thereof, shall be submitted by the Contractor at or prior to the time of his request for the Project Consultant's inspection unless otherwise specified in this Section or elsewhere in the Contract Documents.

- B. Project Consultant (assisted by the Owner's Commissioning Agent, Test and Balance Consultant and others as applicable) will review project closeout submittals with the Owner for content, accuracy, and format:
 - 1. If the Project Consultant disapproves or rejects any project closeout submittal, it shall be returned to the Contractor for correction and modification.
 - 2. The Contractor shall then submit his revised and corrected project closeout submittals to the Project Consultant for review and approval.
 - 3. The Contractor shall continue to revise and resubmit project closeout submittals until all required submittals have been accepted by the Project Consultant.
 - 4. The Project Consultant will forward approved project closeout submittals to the Owner prior to the Owner's Substantial Completion Inspection.
 - 5. Corrections or modifications of Project Closeout Submittals shall not be used as justification for an extension of Time.
- C. Submit closeout submittals under provisions of Section 01330 - Submittal procedures, with content and in formats specified within this Section and elsewhere in the Contract Documents

1.04 MAINTENANCE CONTRACTS

A. Preparation of Submittals

- 1. Obtain maintenance contracts as may be required by the Contract Documents executed in duplicate by responsible Subcontractors, suppliers, or manufacturers, within ten days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of maintenance contracts until the Date of Substantial Completion is determined.
- 2. Verify that documents are in proper form, contain full information, and are notarized.
- 3. Co-execute submittals when required.
- 4. Retain maintenance contracts until time specified for submittal.

B. Form of Submittals

- 1. Draft Copies:
 - a. When a maintenance contract is required to be executed by the Contractor, or the Contractor or a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties.
 - b. Forms for maintenance contracts: Will not be provided by Owner. Prepare a written document utilizing an appropriate contract form, ready for execution by the Contractor,

or the Contractor and subcontractor, supplier or manufacturer. Submit a draft to the Owner through the Project Consultant for approval.

- c. Submit draft copies of all proposed final maintenance contracts to the Project Consultant under provisions of Section 01330, Submittals for the Owner and Project Consultant's review.

2. Form of Submittal:

- a. Prior to Substantial Completion compile two copies of each required maintenance contract properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer.
- b. Organize maintenance contracts into an orderly sequence based on the table of contents of the Project Manual and bind in ring binders with the cover titled "MAINTENANCE CONTRACTS" with binder, accessories, index tabs and table of contents, and other identifications as specified for Warranty documents below adjusted to reflect the appropriate product bonds content.
- c. When operating and maintenance manuals are required for construction or products for which a maintenance contract is required, provide additional copies of each required maintenance contract, as necessary, for inclusion in each required manual.

C. Timing of Submittals:

1. Preliminary Draft:

- a. Submit two copies of preliminary draft maintenance agreement within ninety (90) days of the Contract's required Substantial Completion Date for the Work or a phase thereof.
- b. Project Consultant will review draft and return one copy with comments.

2. Final Submittals:

- a. Submit five (5) copies of revised final maintenance agreements in final form ready for the Owner's execution prior to submitting Contractor's Request for Substantial Completion Inspection.
- b. Effective date of Contract will be the final completion date for the Work or portion thereof as established by Consultant's Letter Establishing Substantial Completion Date, or as otherwise required in the Contract Documents.

1.06 OPERATION AND MAINTENANCE DATA

A. Quality Assurance:

1. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

B. Format:

1. Prepare data in the form of an instructional manual.
2. Bind in commercial quality 8-1/2 x 11 inch three D side ring binders with durable plastic covers, 3 inch maximum ring size:
 - a. When multiple binders are used, correlate data into related consistent groupings.
 - b. Provide sheet lifters for front and back of binder.
 - c. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
 - d. Index Tab Dividers:
 - 1) Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
 - 2) Provide index tab sheet identified as "Contents" in front of the first page of the table of contents to prevent laser printer or copier toner from sticking to vinyl binder.
3. Text: Manufacturer's printed data, or neatly typewritten data on 20 pound minimum paper.
4. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

C. Contents, Each Volume:

1. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Project Consultant, Subconsultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.
2. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts and applicable local maintenance contractors.
3. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
4. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
5. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

6. Warranties: Bind in copy of each.
7. Product Bonds: Bind in photocopy of each.

D. Manual For Materials And Finishes:

1. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured Products.
2. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
3. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
4. Additional Requirements: As specified in individual Product specification sections.
5. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

E. Manual for Equipment and Systems:

1. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
2. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
3. Include color-coded wiring diagrams as installed.
4. Operating Procedures:
 - a. Include start-up, break-in, and routine normal operating instructions and sequences.
 - b. Include regulation, control, stopping, shut-down, and emergency instructions.
 - c. Include summer, winter, and any special operating instructions.
5. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
6. Provide servicing and lubrication schedule, and list of lubricants required.

7. Include manufacturer's printed operation and maintenance instructions.
8. Include sequence of operation by controls manufacturer.
9. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
10. Provide control diagrams by controls manufacturer as installed.
11. Provide Contractor's coordination drawings, with color-coded piping diagrams as installed.
12. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
13. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
14. Include test and balancing reports as specified in the Contract Documents.
15. Additional Requirements: As specified in individual Product specification sections.
16. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

F. Instruction of Owner Personnel:

1. Provide copies of all instructional materials, including video taped documentation of training sessions or other instructional audio-visual materials, as specified in Section 01820, Demonstration and Training and other locations in the Contract Documents.
2. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

G. Submittals:

1. Preliminary Draft/Outline:
 - a. Submit two copies of preliminary draft or proposed formats and outlines of contents within ninety (90) days of receipt of Notice to Proceed.
 - b. Project Consultant and, as applicable, the Owner's Commissioning Authority and/or other consultants, will review draft and return one copy with comments.
2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
3. Review Copy:

- a. Submit 1 copy of completed volumes thirty (30) days prior to submitting Contractor's Request for Substantial Completion Inspection.
 - b. This copy will be reviewed and returned with comments by the Project Consultant, the Owner, and other Owner consulting reviewers as applicable.
 - c. Revise content of all document sets as required by comments provide by the Project Consultant and the Owner prior to final submission.
4. Final Submittals:
- a. Submit five (5) sets of revised final volumes in final form prior to submitting Contractor's Request for Substantial Completion Inspection.

1.07 MAINTENANCE MATERIALS

- A. Submit maintenance materials, equipment and accessories of the types and in the quantities specified within the respective specification Sections of Divisions 2 through 16.
- B. Provide maintenance materials, equipment and accessories in original manufacturer's packaging with manufacturer's original, clearly legible labeling.
- C. Coordinate delivery date and final storage location of maintenance materials, equipment and accessories to the Owner through the Project Consultant prior to submittal of Contractor's Request for Substantial Completion Inspection.
- D. Do not utilize maintenance materials or equipment for cleaning, maintenance or other Contractor operations.
- E. Test and inspect maintenance materials, equipment and accessories to ensure operability, fitness for purpose and new condition prior to submitting to the Owner.

1.08 PRODUCT WARRANTIES

- A. Summary:
 1. This article specifies general administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers standard warranties on products and special warranties.
 - a. Refer to Document BCF 170 for terms of the Contractor's special warranty of workmanship and materials.
 - b. Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Divisions 2 through 16.

2. Disclaimers and Limitations: Manufacturer's exclusions, disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

B. Definitions:

1. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
2. Special Warranties:
 - a. Are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.
 - b. Refer to individual Sections of Divisions 2 through 16 for specific content requirements, standard form documents, and particular requirements for submittal of special warranties.

C. Warranty Requirements

1. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
2. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
3. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
4. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
5. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

6. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

D. Submittals:

1. Draft Copies:

- a. When a warranty document is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Project Consultant for approval.
- b. Forms for special warranties are included in the Project Manual in the respective Sections of Divisions 2 through 16 or are available through the Project Consultant. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or the Contractor and subcontractor, supplier or manufacturer. Submit a draft to the Owner through the Project Consultant for approval.
- c. Submit draft copies of all proposed final warranty documents to the Project Consultant under provisions of Section 01300, Submittals for the Owner and Project Consultant's review.
- d. Edit warranty documents to make them project specific for the Owner.
- e. Remove exclusions, disclaimers and limitations on product warranties not allowed by the Contract Documents.
- f. Include terms and conditions in addition to the "standard" warranty as may be required by the Contract Documents.
- g. Catalog copies or other "sample" warranty forms not presented in project specific format for the Owner shall be resubmitted.

2. Form of Submittal:

- a. Prior to Substantial Completion compile two copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer.
- b. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- c. Bind in commercial quality 8-1/2 x 11 inch three D side ring binders with durable plastic covers, 3 inch maximum ring size:
 - 1) Provide sheet lifters for front and back of binder.

- 2) Cover: Identify each binder with typed or printed title WARRANTIES with title of Project; name, address and telephone number of Contractor and name of responsible company principal.
 - 3) Table of Contents:
 - i) Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of Product or work item.
 - ii) Provide index tab sheet identified as "Contents" in front of the first page of the table of contents to prevent laser printer or copier toner from sticking to vinyl binder.
 - 4) Separate each warranty with index tab sheets keyed to the Table of Contents listing.
 - i) Provide full information, using separate typed sheets as necessary.
 - ii) List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- d. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty documents, as necessary, for inclusion in each required manual.

E. Timing of Submittals:

1. Draft warranty documents: Submit with shop drawings, product data or samples as otherwise required for the specified product. If no other submittals are required for a specific product, submit required draft warranty documents in a timely manner prior to delivery and installation of the product on the site.
2. Submit final warranty documents to the Project Consultant not later than seven (7) days after the date of Substantial Completion for the Work or a portion thereof as established on the Project Consultant's executed Consultant's Letter Establishing Substantial Completion Date.
3. If the Project Consultant's executed Consultant's Letter Establishing Substantial Completion Date, designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Project Consultant.
4. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Project Consultant within seven (7) days of completion of that designated portion of the Work.

1.09 PRODUCT BONDS

A. Preparation of Submittals

1. Obtain bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of bond until the Date of Substantial completion is determined.
2. Verify that documents are in proper form, contain full information, and are notarized.
3. Co-execute submittals when required.
4. Retain bonds until time specified for submittal.

B. Form of Submittals

1. Draft Copies:

- a. When a product bond is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties.
- b. Forms for product bonds: Provided by Contractor. Prepare a written document utilizing an appropriate form, ready for execution by the Contractor, or the Contractor and subcontractor, supplier or manufacturer. Submit a draft to the Owner through the Project Consultant for approval.
- c. Submit draft copies of all proposed final product bonds to the Project Consultant for review.

2. Form of Submittal:

- a. Prior to Substantial Completion compile two copies of each required product bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer.
- b. Organize product bonds into an orderly sequence based on the table of contents of the Project Manual and bind in ring binders with the cover titled "Product Bonds" with accessories, index tabs and table of contents, and other identifications as specified for Warranty documents above adjusted to reflect the appropriate product bonds content.
- c. When operating and maintenance manuals are required for bonded construction or products, provide additional copies of each required product bonds, as necessary, for inclusion in each required manual.

C. Timing of Submittals:

1. Draft product bonds: Submit with shop drawings, product data or samples as otherwise required for the specified product. If no other submittals are required for a specific product, submit required draft product bonds in a timely manner prior to delivery and installation of the product on the site.
2. Submit final product bond documents to the Project Consultant not later than seven (7) days after the date of Substantial Completion for the Work or a portion thereof as established on the Project Consultant's executed Consultant's Letter Establishing Substantial Completion Date.
3. If the Project Consultant's executed Consultant's Letter Establishing Substantial Completion Date, designates a commencement date for product bonds other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit product bonds upon request of the Project Consultant.
4. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed product bonds to the Project Consultant within seven (7) days of completion of that designated portion of the Work.

1.10 PROJECT RECORD DOCUMENTS

A. General Requirements:

1. Do not use record documents for construction purposes.
2. Protect from deterioration and loss in a secure, fire-resistive location.
3. Provide access to record documents for reference by the Project Consultant, the Owner, and other Owner related personnel during normal working hours.
4. Make project record documents available for inspection by jurisdictional authorities at all times.
5. Ensure special protection of project record documents

B. Maintain at the site for the Owner one record copy of:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders, Project Consultant's Supplementary Instructions and other modifications to the Contract.
5. Approved submittals including all administrative submittals as may be required in the Project Manual.

6. Field Test Records and Reports.

7. Construction Photographs.

C. Maintenance of Project Record Documents:

1. Store documents, samples in contractor's field office apart from documents used for construction.

a. Provide fire resistive files and racks for storage of documents.

b. Provide locked fire resistive cabinets or secure storage spaces for storage of samples.

2. Filing Organization:

a. File information concerning individual products according to the 1995 edition of MasterFormat as published by the Construction Specifications Institute.

b. File information concerning assemblies and systems according to the CSI/CSC UniFormat as published by the Construction Specifications Institute, edition current upon Notice to Proceed date.

3. Maintain documents in a clean, dry, legible condition and in good order.

D. Record Drawings:

1. Maintain a clean, undamaged set of blue or black line on white prints of Contract Drawings and Shop Drawings.

2. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown.

3. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings.

4. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

5. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.

6. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.

7. Note related Change Order numbers where applicable.

8. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.

E. Record Specifications:

1. Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction.
2. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
3. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation.
4. Note related record drawing information and Product Data.
5. Upon completion of the Work, submit record Specifications to the Project Consultant for the Owner's records.

F. Record Sample Submitted:

1. Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Project Consultant and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes.
2. Comply with delivery to the Owner's Sample storage area.

1.11 SPARE PARTS

- A. Submit spare parts and related accessories of the types and in the quantities specified within the respective specification Sections of Divisions 2 through 16.
- B. Provide spare parts in original manufacturer's packaging with manufacturer's original, clearly legible labeling.
- C. Coordinate delivery date and final storage location of spare parts through the Project Consultant prior to submittal of Contractor's Request for Substantial Completion Inspection.
- D. Do not utilize spare parts for any purpose during construction.
- E. Test and inspect spare parts to ensure operability, fitness for purpose and new condition prior to submitting to the Owner.

1.12 ELECTRONIC MEDIA

A. General Requirements:

1. All Work, including surveying work, drawings, maps, details or other drawing information to be provided in electronic media by the Contractor shall be accomplished and developed

using computer-aided design and drafting (CADD) software and procedures conforming to the following criteria.

B. Graphic Format:

1. Provide all CADD data in Autodesk, Inc.'s AutoCAD release 2000 (or later version) for Windows native electronic digital format (i.e., .dwg).
2. Target platform: Pentium III based IBM compatible personal computer with a minimum Windows 98 compatibility.
3. Ensure that all digital files and data (e.g., base files, prototype drawings, reference files, blocks, attribute links, etc.) are compatible with the Owner's target CADD system (i.e., basic and advanced CADD software, platform, database software), and adhere to the standards and requirements specified herein.
4. The term "compatible" means that data can be accessed directly by the target CADD system without translation, preprocessing, or postprocessing of the electronic digital data files. It is the responsibility of the contractor to ensure this level of compatibility.
5. Any non-graphical database delivered with prepared drawings: provide in relational database format compatible with Microsoft Access 2000 or higher, or other compatible SQL format database.
6. Maintain all linkages of non-graphical data with graphic elements, relationships between database tables, and report formats.
7. All database tables: conform to the structure and field-naming guidance provided upon request by the Owner.

C. CADD Standards:

1. Standard plotted drawing size: 24 inch x 36 inch sheets.
2. Coordinate with the Owner concerning the standard file naming protocol to be utilized.
3. No deviations from the Owner's established CADD standards will be permitted unless prior written approval of such deviation has been received from the Owner.

D. Delivery Media And Format:

1. Submit two copies of all CADD data and files developed under this contract shall be delivered to the Owner on electronic digital media as a closeout submittal as required in Section 01770, Closeout Procedures.
2. For projects with electronic digital files or sets of files less than or equal to four (4) standard high density (1.44 megabyte capacity) diskettes, the electronic digital data and files may be provided on MS-DOS FAT or extended FAT 3-1/2-inch high-density floppy disks.

3. For projects with electronic digital files or sets of files larger than four (4) diskettes, the electronic digital data and files shall be provided on 5-1/4-inch ISO-9660 CD-ROM.
4. The electronic digital media shall be in the format which can be read and processed by the Owner's target CADD system.
5. The external label for each electronic digital media shall contain, as a minimum, the following information:
 - a. The Project Number, Project Title and date.
 - b. The Facility Name
 - c. The format and version of operating system software.
 - d. The name and version of utility software used for preparation (e.g., compression/decompression) and copying files to the media.
 - e. The sequence number of the digital media.
 - f. A list of the filenames.
6. Before a CADD file is placed on the delivery electronic digital media, the following procedures shall be performed:
 - a. Make sure all reference files are attached without device or directory specifications.
 - b. Compress and reduce all design files using WINZIP or other compatible file compression/decompression software approved by the Owner. If the file compression/decompression software is different from that specified above, then an electronic digital media copy of the file compression/decompression software shall be purchased for the Owner and provided to the Owner with the delivery media.
 - c. Make sure that all support files such as those listed above are in the same directory and that references to those files do not include device or directory specifications.
 - d. Include any standard sheets (i.e., abbreviation sheets, standard symbol sheets, etc.) necessary for a complete project.

E. Submittal:

1. Submit as Project Record Documents specified above and under provisions of Section 01770, Closeout Procedures.
2. Submit electronic media with a transmittal letter containing, as a minimum, the following information:
 - a. The information included on the external label of each media unit (e.g., disk, tape), along with the total number being delivered, and a list of the names and descriptions of the files on each one.

- b. Certification that all delivery media are free of known computer viruses. A statement including the name(s) and release date(s) of the virus-scanning software used to analyze the delivery media, the date the virus-scan was performed, and the operator's name shall also be included with the certification. The release or version date of the virus-scanning software shall be the current version that has detected the latest known viruses at the time of delivery of the digital media.
- c. The following "Plot File Development and Project Documentation Information" as an enclosure or attachment to the transmittal letter provided with each electronic digital media submittal.
 - 1) Documentation of the plot file for each drawing which will be needed to be able to duplicate the creation of the plot file by the Owner at a later date. This documentation shall include the plotter configuration (e.g., name and model of plotter), pen settings, drawing orientation, drawing size, and any other special instructions.
 - 2) Instructions concerning how to generate plotted, or hard copy, drawings from the provided plot files.
 - 3) List of any deviations from the Owner's standard layer/level scheme and file-naming conventions.
 - 4) List of all new symbol blocks created for project, which were not provided to the Contractor with the Owner-furnished materials.
 - 5) List of any non-IGES crosshatch/patterns used.
 - 6) List of all new figures, symbols, tables, schedules, details, and other blocks created for the project, which were not provided to the Contractor with the Owner-furnished materials, and any associated properties.
 - 7) List of all database files associated with each drawing, as well as a description and documentation of the database format and schema design.
 - 8) Recommended modifications which will be necessary to make the data available for GIS use.

F. Ownership:

- 1. Broward County, Florida, for itself and such others as it deems appropriate, will have unlimited rights under this contract to all information and materials developed under this contract and furnished to the Owner and documentation thereof, reports, and listings, and all other items pertaining to the work and services pursuant to this agreement including any copyright.
- 2. Unlimited rights under this contract are rights to use, duplicate, or disclose text, data, drawings, and information, in whole or in part in any manner and for any purpose whatsoever without compensation to or approval from the Contractor or Surveyor.

3. The Owner will at all reasonable times have the right to inspect the work and will have access to and the right to make copies of the above-mentioned items.
4. All text, electronic digital files, data, and other products generated under this contract shall become the property of the Owner.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01820 DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Demonstration and Instructions
- B. Documentation of Demonstration and Instructions
- C. Commissioning Coordination

1.02 RELATED DOCUMENTS

- A. Section 01770: Closeout Procedures
- B. Section 01780: Closeout Submittals

1.03 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Demonstrate Project equipment and systems on site to the Owner's personnel.
 - 1. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled times, at equipment location.
 - 2. Ensure comprehensive demonstration of all features, capabilities, and controls.
- C. Provide additional training concerning operator safety, maintenance, operation, troubleshooting and other related topics in an Owner designated classroom environment.
- D. Provide demonstration and classroom instruction by trained instructors and manufacturers' representatives who are knowledgeable about the Work and its component systems, assemblies, equipment, and products.
- E. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- F. Utilize operation and maintenance manual content as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- H. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

1.04 DOCUMENTATION OF DEMONSTRATIONS AND INSTRUCTIONS

- A. Video record demonstrations and instructions of all system startup and operation.
- B. Provide standard format DVDs to be submitted to Owner as a closeout submittal under provisions of Section 01780, Closeout Submittals.
- C. DVD identification:
 - 1. Provide protective sleeve or plastic box packaging for all DVDs.
 - 2. Clearly label DVD contents using indelible ink on adhesive labels on both the individual tapes and protective sleeves/plastic boxes.
- D. Manufacturer's Instruction Videos: Original DVDs, in original packaging, as prepared by system or equipment manufacturers may be provided to supplement instruction and demonstration specified above. Recorded demonstration and instruction concerning the specific systems, equipment, and components as specified above must be provided in addition to any manufacturer prepared DVDs.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 06105

MISCELLANEOUS CARPENTRY

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: ICC-ES evaluation reports for treated wood.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: Provide dressed lumber, S4S, marked with grade stamp of inspection agency.

2.2 TREATED MATERIALS

- A. Preservative-Treated Materials: AWPA C2, except that lumber not in ground contact and not exposed to the weather may be treated according to AWPA C31 with inorganic boron (SBX).
 - 1. Use treatment containing no arsenic or chromium.
 - 2. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.
 - 3. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- B. Provide preservative-treated materials for items indicated on Drawings, and the following:
 - 1. Wood members in connection with roofing, flashing, vapor barriers, and waterproofing.
 - 2. Concealed members in contact with masonry or concrete.
 - 3. Wood framing members that are less than 18 inches above the ground.
 - 4. Wood floor plates that are installed over concrete slabs-on-grade.
- C. Fire-Retardant-Treated Materials: Comply with performance requirements in AWPA C20.
 - 1. Use Exterior type for exterior locations and where indicated.
 - 2. Use Interior Type A, High Temperature (HT) where indicated.
 - 3. Use Interior Type A unless otherwise indicated.

4. Identify with appropriate classification marking of a testing and inspecting agency acceptable to authorities having jurisdiction.

2.3 LUMBER

- A. Dimension Lumber:
 1. Maximum Moisture Content: 19 percent.
 2. Interior Partition Framing: Standard, Stud, or No. 3: Mixed southern pine: SPIB; or Western woods: WCLIB or WWPA.
 3. Other Framing: Construction, Stud, or No. 3: Southern pine: SPIB.
- B. Exposed Boards: Mixed southern pine, No. 1: SPIB; with 19 percent maximum moisture content.
- C. Concealed Boards: Mixed southern pine, No. 2: SPIB; with 19 percent maximum moisture content.
- D. Miscellaneous Lumber: Standard, Stud, or No. 3 grade with 19 percent maximum moisture content of any species. Provide for nailers, blocking, and similar members.

2.4 PLYWOOD BACKING PANELS

- A. Telephone and Electrical Equipment Backing Panels: Plywood, Exposure 1, C-D Plugged, fire-retardant treated, not less than 3/4-inch nominal thickness.

2.5 FASTENERS

- A. Fasteners: Size and type indicated. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or Type 304 stainless steel.
 1. Power-Driven Fasteners: CABO NER-272.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Set miscellaneous rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Securely attach miscellaneous rough carpentry to substrates, complying with the following:

1. CABO NER-272 for power-driven fasteners.
2. Table 2304.9.1, "Fastening Schedule," in the Florida Building Code 5th Edition (2014).

END OF SECTION

SECTION 07311
ASPHALT SHINGLES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and Samples
- B. Warranties: Provide standard manufacturer's written warranty, signed by manufacturer agreeing to promptly repair or replace asphalt shingles that fail in materials or workmanship within 25 years from date of Substantial Completion, prorated, with first 5 years nonprorated.

PART 2 - PRODUCTS

2.1 ASPHALT SHINGLES

- A. Fire-Resistance Characteristics: ASTM E 108 or UL 790, Class A. Identify products with appropriate markings of testing and inspecting agency acceptable to authorities having jurisdiction.
- B. Fiberglass Shingles: ASTM D 3462.
 - 1. Laminated-Strip Asphalt Shingles: Match Existing.

2.2 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.
- B. Roofing Nails: Aluminum, stainless-steel, or hot-dip galvanized-steel shingle nails, minimum 0.120-inch diameter, of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through OSB or plywood sheathing.
- C. Sheet Metal Flashing and Trim: Comply with requirements in Division 7 Section "Sheet Metal Flashing and Trim."

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with recommendations in ARMA's "Residential Asphalt Roofing Manual" and with asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
- B. Apply self-adhering sheet underlayment at penetrations of roof to at least 24 inches beyond penetration.
- C. Install felt underlayment on roof deck not covered by self-adhering sheet underlayment.
- D. Install metal flashings to comply with requirements in Division 7 Section "Sheet Metal Flashing and Trim" and according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
- E. Match existing installation, maintaining uniform exposure.

END OF SECTION

SECTION 07620

SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data, Shop Drawings, and Samples.
- B. Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.
- C. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

PART 2 - PRODUCTS

2.1 SHEET METAL

- A. Aluminum Sheet: ASTM B 209, alloy as standard with manufacturer for finish required, not less than 0.032 inch thick; and with mill finish.
- B. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, with No. 2D finish; not less than 0.016 inch thick.
- C. Metallic-Coated Steel Sheet: Galvanized structural-steel sheet, ASTM A 653/A 653M, G90, or aluminum-zinc alloy-coated structural-steel sheet, ASTM A 792/A 792M, Class AZ50 coating designation, Grade 40 0.028-inch nominal thickness.

2.2 ACCESSORIES

- A. Felt Underlayment: ASTM D 226, Type II (No. 30), asphalt-saturated organic felts.
- B. Self-Adhering Sheet Underlayment, High Temperature: Butyl or SBS-modified asphalt; slip-resisting-polyethylene surfaced; with release paper backing; cold applied. Stable after testing at 240 deg F and passes after testing at minus 20 deg F; ASTM D 1970.
- C. Slip Sheet: Building paper, 3-lb/100 sq. ft. minimum, rosin sized.
- D. Fasteners: Wood screws, annular-threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners.
 - 1. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
 - 2. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.

- 3. Fasteners for Metallic-Coated Steel Sheet: Hot-dip galvanized steel or Series 300 stainless steel.
- E. Solder for Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.
- F. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.3 FABRICATION

- A. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of the item indicated.
- B. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
- C. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with SMACNA's "Architectural Sheet Metal Manual." Allow for thermal expansion; set true to line and level. Install Work with laps, joints, and seams permanently watertight and weatherproof; conceal fasteners where possible.
- B. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
- C. Fabricate nonmoving seams in sheet metal with flat-lock seams. For aluminum, form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
- D. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches, except where pre-tinned surface would show in finished Work.
 - 1. Do not solder metallic-coated steel and aluminum sheet.
 - 2. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

- E. Aluminum Flashing and Trim: Coat back side of aluminum flashing and trim with bituminous coating where it will contact wood, ferrous metal, or cementitious construction.
- F. Separate dissimilar metals with a bituminous coating or polymer-modified, bituminous sheet underlayment.

END OF SECTION

SECTION 07920

JOINT SEALANTS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and color Samples.
- B. Environmental Limitations: Do not proceed with installation of joint sealants when ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS

- A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under service and application conditions.
- B. Sealant for General Exterior Use Where Another Type Is Not Specified, One of the Following:
 - 1. Single-component, neutral-curing silicone sealant, ASTM C 920, Type S; Grade NS; Class 25; for Use NT.
 - 2. Single-component, nonsag urethane sealant, ASTM C 920, Type S; Grade NS; Class 25; and for Use NT.
- C. Sealant for Interior Use at Perimeters of Door and Window Frames Where Another Type Is Not Specified:
 - 1. Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

2.2 MISCELLANEOUS MATERIALS

- A. Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.
- D. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with ASTM C 1193.
- B. Install sealant backings to support sealants during application and to produce cross-sectional shapes and depths of installed sealants that allow optimum sealant movement capability.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

END OF SECTION

SECTION 08110
STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and Shop Drawings.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cold-Rolled Steel Sheets: ASTM A 1008/A 1008M, suitable for exposed applications.
- B. Hot-Rolled Steel Sheets: ASTM A 1011/A 1011M, free of scale, pitting, or surface defects.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, G60 or A60.
- D. Frame Anchors: ASTM A 591/A 591M, 40Z coating designation; mill phosphatized.
1. For anchors built into exterior walls, sheet steel complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

2.2 HOLLOW METAL DOORS AND FRAMES

- A. Basis of Design Products:
1. Hollow metal doors, in sizes and profiles as indicated on the drawings, as manufactured by:
Ceco Door
9159 Telecom Drive
Milan, Tennessee 38358
2. Bi-swinging kitchen doors, in sizes and profiles as indicated on the drawings, as manufactured by:
Eliason Corporation
9229 Shaver Road
Kalamazoo, Michigan 49024

or

3. Equal as approved by the Architect.
- B. Fire-Rated Doors and Frames: Labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, based on testing according to NFPA 252.
- C. Smoke-Control Door Assemblies: Comply with NFPA 105 or UL 1784.
- D. Doors: Complying with ANSI 250.8 for level and model and ANSI A250.4 for physical-endurance level indicated, 1-3/4 inches thick unless otherwise indicated.
1. Interior Doors: Level 2 and Physical Performance Level B (Heavy Duty), Model 2 (Seamless).
 2. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as door face sheets.
- E. Bi-swinging Kitchen Doors shall be Eliason SR 8000 as follows:
1. 0.75" thick plywood core with a stainless steel edge capping and adhered both sides with aluminum top and stainless steel plates forming a 0.875" overall panel thickness.
 2. Vision panel: 9" x 14", single pane with black rubber molding.
 3. Kickplate: 48" high stainless steel base plate width of door both sides.
 4. Aluminum Jamb Guard 11" high.
 5. Mid-rise (DI) "V" Cam gravity hinge included.
- F. Frames: ANSI A250.8; conceal fastenings unless otherwise indicated.
1. Steel Sheet Thickness for Interior Doors: 0.053 inch.
 2. Fabricate interior frames with mitered or coped and continuously welded corners.
 3. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames.
 4. Frame Anchors: Not less than 0.042 inch thick.
- G. Glazing Stops: Nonremovable stops on outside of exterior doors and on secure side of interior doors; screw-applied, removable, glazing stops on inside, fabricated from same material as door face sheet in which they are installed.
- H. Door Louvers: Sight proof per SDI 111C.
- I. Door Silencers: Three on strike jambs of single-door frames and two on heads of double-door frames.
- J. Grout Guards: Provide where mortar might obstruct hardware operation.
- K. Prepare doors and frames to receive mortised and concealed hardware according to ANSI A250.6 and ANSI A115 Series standards.
- L. Reinforce doors and frames to receive surface-applied hardware.

- M. Prime Finish: Manufacturer's standard, factory-applied coat of lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install hollow metal frames to comply with ANSI/SDI A250.11.
 - 1. Fire-Rated Frames: Install according to NFPA 80.
- B. Install Bi-swinging Kitchen Doors per manufacturer's instructions.
- C. Install doors to provide clearances between doors and frames as indicated in ANSI/SDI A250.11.
- D. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying rust-inhibitive primer. Use galvanizing repair paint for metallic coated surfaces.

END OF SECTION

SECTION 08311
ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data.
- B. Fire-Rated Access Doors and Frames: Labeled by a testing and inspecting agency acceptable to authorities having jurisdiction based on testing per the following:
 - 1. Vertical Access Doors: NFPA 252 or UL 10B.
 - 2. Horizontal Access Doors and Frames: ASTM E 119 or UL 263.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Steel Sheets: ASTM A 1008/A 1008M or ASTM A 591/A 591M.
- B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, with A60 or G60 coating.
- C. Stainless-Steel Sheets: ASTM A 666, Type 304, with No. 4 directional satin finish.

2.2 ACCESS DOORS AND PANELS

- A. Basis of Design Products:
 - 1. Milcor Access Doors sized as indicated or as required for application.
Hart & Cooley, Inc.
5030 Corporate Exchange Boulevard SE
Grand Rapids, Michigan 49512

or

 - 2. Equal as approved by the Architect.
- B. Flush Access Doors and Frames with Exposed Trim: Prime-painted steel units.
- C. Flush Access Doors and Trimless Frames: Prime-painted steel units with drywall bead flange.

- D. Recessed Access Doors and Trimless Frames: Prime-painted steel units designed for insertion into acoustical tile ceiling.
- E. Fire-Rated, Insulated, Flush Access Doors and Frames with Exposed Trim: Prime-painted steel, self-latching units with automatic closer.
- F. Fire-Rated, Insulated, Flush Access Doors and Trimless Frames: Prime-painted steel, self-latching units with automatic closer.
- G. Fire-Rated, Uninsulated, Flush Access Doors and Frames with Exposed Trim: Prime-painted steel, self-latching units with automatic closer for wall installation only.
- H. Locks: Flush to finished surface, screwdriver operated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install access doors and panels accurately in position. Adjust hardware and door and panels for proper operation.
- B. Install fire-rated access doors and panels according to NFPA 80.

END OF SECTION

SECTION 08710
DOOR HARDWARE

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes hardware for doors.
- B. Related Sections:
 - 1. Section 08110 - Steel Doors and Frames

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI A156.1 - Butts and Hinges.
 - 2. ANSI A156.2 - Bored and Preassembled Locks and Latches.
 - 3. ANSI A156.3 - Exit Devices.
 - 4. ANSI A156.4 - Door Controls - Closures.
 - 5. ANSI A156.7 - Template Hinge Dimensions.
 - 6. ANSI A156.8 - Door Controls - Overhead Holders.
 - 7. ANSI A156.12 - Interconnected Locks and Latches.
 - 8. ANSI A156.13 - Mortise Locks and Latches.
 - 9. ANSI A156.18 - Materials and Finishes
- B. National Fire Protection Association:
 - 1. NFPA 80 - Standard for Fire Doors, Fire Windows.
 - 2. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.
- C. Underwriters Laboratories Inc.:
 - 1. UL 10B - Fire Tests of Door Assemblies.
 - 2. UL 305 - Panic Hardware.
 - 3. UL - Building Materials Directory.
- D. Warnock Hersey:
 - 1. WH - Certification Listings.

1.3 PERFORMANCE REQUIREMENTS

- A. Fire Rated Openings: Provide door hardware listed by UL or other testing laboratory approved by applicable authorities.
 - 1. Hardware: Tested in accordance with NFPA Pamphlet #80, NFPA Standard No. 101 and UL 10C.

1.4 SUBMITTALS

- A. Section 01340 – Shop Drawings, Product Data and Samples: Submittal procedures.

- B. Shop Drawings:
 - 1. Indicate locations and mounting heights of each type of hardware, schedules, catalog cuts, electrical characteristics and connection requirements.
- C. Manufacturer's Installation Instructions: Submit special procedures, and perimeter conditions requiring special attention.

1.5 CLOSEOUT SUBMITTALS

- A. Division 1 – General Requirements: Closeout procedures.
- B. Project Record Documents: Record actual locations of installed cylinders and their master key code.
- C. Operation and Maintenance Data: Submit data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
- D. Keys: Provide construction keys as required for construction purposes. Owner to provide Medeco cylinders and keys.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with the following requirements:
 - 1. ANSI A156 series.
 - 2. NFPA 80.
 - 3. UL 305.

1.7 QUALIFICATIONS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters' Laboratories, Inc., as suitable for purpose specified and indicated.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Division 1 – General Requirements: Product storage and handling requirements.
- B. Package hardware items individually with necessary fasteners, instructions, and installation templates, when necessary; label and identify each package with door opening code to match hardware schedule.
- C. Wrap, protect finishing hardware items for shipment. Deliver to manufacturing contractor's hardware items required by them for their application; deliver balance of hardware to job; store in designated location. Each item shall be clearly marked with its intended location.

1.9 COORDINATION

- A. Division 1 – General Requirements: Coordination and project conditions.

- B. Coordinate Work with other directly affected sections involving manufacture or fabrication of internal reinforcement for door hardware and recessed items.
 - 1. Provide templates or actual hardware as required to ensure proper preparation of doors and frames.
- C. Sequence installation to accommodate required utility connections.
- D. Coordinate Owner's cylinder and keying requirements during course of Work.

1.10 WARRANTY

- A. Division 1 – General Requirements: Product warranties and product bonds.
- B. Furnish two year manufacturer warranty for locksets and door closers.

1.11 MAINTENANCE MATERIALS

- A. Division 1 – General Requirements: Maintenance materials.
- B. Furnish special wrenches and tools applicable for each different and for each special hardware component.
- C. Furnish maintenance tools and accessories supplied by hardware component manufacturer.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. To the greatest extent possible, obtain each kind of hardware from only one manufacturer.
- B. All numbers and symbols used herein have been taken from the current catalogues of the following manufacturers.

PRODUCT	SPECIFIED MANUFACTURER	ACCEPTABLE SUBSTITUTE
1) Hinges	Hager	Stanley,Bommer,Ives
2) Locks & Latches	Schlage	Corbin-Russwin,Sargent
3) Cylinders, Keys, Keying	Medico	None (Owner preferred, provided by Owner)
4) Exit Devices	Von Duprin	Precision,Sargent
5) Door Closers	LCN	Corbin-Russwin,Sargent
6) OH Stops/holders	Glynn Johnson	Rixson
7) Magnetic Hold Opens	LCN	Dor-O-Matic
8) Wall Stops/Floor Stops, Flushbolts	Ives	Hager,Rockwood
Kitchen Renovation 1700 Blount Road, Pompano Beach FL		North Homeless Assistance Center Door Hardware

9) Kick Plates	Ives	Rockwood,Quality
10) Threshold/Weather-strip	Pemko	National Guard, Reese
11) Silencers	Ives	GlynnJohnson,Rockwood
12) Key Cabinet	Lund	Key Control
13) Or approved equal		

2.2 FINISH OF HARDWARE

- A. Hinges to be Stainless Steel (32D), Door Closers to be Aluminum. Locks to be Satin Chrome (26D), Exit Devices to be Satin Chrome (26D). Overhead Holders to be Satin Chrome (26D), Flat Goods to be Satin Chrome (26D) or Stainless Steel (32D) and the Thresholds to be Mill Finish Aluminum.

2.3 HINGES AND PIVOTS

- A. Exterior butts shall be Stainless Steel. Butts on all out swinging doors shall be furnished with non-removable pins (NRP).
- B. Interior butts shall be as listed.
- C. Doors 5' or less in height shall have two (2) butts. Furnish one (1) additional butt for each 2'6" in height or fraction thereof. Dutch door shall have two (2) butts per leaf.

2.4 KEYING

- A. All cylinders shall be Medeco and will be provided by Owner. Ensure locksets are compatible.

2.5 LOCKS, LATCHES AND BOLTS

- A. Mortise Locks – ANSI A156.13, 1994, Grade 1 Operational, Grade 1 Security, ANSI/ASTM F476-76 Grade 30, UL listed. Levers shall be forged brass, bronze, or cast stainless steel, 07 lever design extruded brass, bronze or stainless steel. Meets A117.1 Accessibility Codes. Steel Case with ¾" throw stainless steel anti-friction latchbolt and a 1" throw stainless steel deadbolt. Lock case shall be field reversible, without opening the lock chassis and universal chassis to accept both knob and lever functions. Lock trim shall incorporate individual lever support springs in each rose or escutcheon. Lever connection by attaching threaded bushings tightened by a spanner wrench. Threaded set screws will not be accepted. Lock spindles shall be two independent inside and outside spindles to prevent manipulation of lock. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame.
- B. Schlage L9000 series.
- C. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.

- D. Lock Manufacturers: Subject to compliance with requirements, provide lockset products of the following approved manufacturers:
- E. Or approved equal.
- F. Acceptable substitutions:
 1. Corbin Russwin ML2000 series
 2. Sargent 8200 series.

2.6 EXIT DEVICES

- A. All devices shall be Von Duprin 98 Series in types and functions specified. All devices must be listed under "Panic Hardware" in accident equipment list of Underwriters Laboratories. All labeled doors with "Fire Exit Hardware" must have labels attached and be in strict accordance with Underwriters Laboratories.
- B. All exit devices shall be tested to ANSI/BHMA A156.3 test requirements by a BHMA certified testing laboratory. A written certification showing successful completion of a minimum of 1,000,000 cycles must be provided
- C. All surface strikes shall be roller type and come complete with a plate underneath to prevent movement. And shall be provided with a dead-latching feature to prevent latchbolt tampering.
- D. All exit devices shall be mounted with closed head through bolts (sex bolts).
- E. Or approved equal.
- F. Acceptable substitutions:
 1. Precision 1100 series
 2. Sargent 8800 series

2.7 DOOR CLOSERS

- A. All closers shall be LCN 4041 series having non-ferrous covers, forged steel arms separate valves for adjusting backcheck, closing and latching cycles and adjustable spring to provide up to 50% increase in spring power. Closers shall be furnished with parallel arm mounted on all doors opening into corridors or other public spaces and shall be mounted to permit 180 degrees door swing wherever wall conditions permit. Furnish with non-hold open arms unless otherwise indicated.
- B. Door closer cylinders shall be of high strength cast iron construction to provide low wear operating capabilities of internal parts throughout the life of the installation. All door closers shall be tested to ANSI/BHMA A156.4 test requirements by a BHMA certified testing laboratory. A written certification showing successful completion of a minimum of 10,000,000 cycles must be provided.
- C. Door closers shall utilize temperature stable fluid capable of withstanding temperature ranges of 120 degrees Fahrenheit to -30 degrees Fahrenheit,

without requiring seasonal adjustment of closer speed to properly close the door. Closers for fire-rated doors shall be provided with temperature stabilizing fluid that complies with the standards UBC 7-2 (1997) and UL 10C.

- D. Door closers shall incorporate tamper resistant non-critical screw valves of V-slot design to reduce possible clogging from particles within the closer. Closers shall have separate and independent screw valve adjustments for latch speed, general speed, and hydraulic backcheck. Backcheck shall be properly located so as to effectively slow the swing of the door at a minimum of 10 degrees in advance of the dead stop location to protect the door frame and hardware from damage. Pressure relief valves (PRV) are not acceptable.
- E. Door closers shall be mounted with closed head through bolts (sex bolts).
- F. Or approved equal.
- G. Acceptable substitutions:
 - 1. Corbin-Russwin DC2200 series
 - 2. Sargent 350 series

2.8 TRIM AND PLATES

- A. Kick plates, mop plates, and armor plates, shall be .050 gage with 32D finish. Kick plates to be 10" high, mop plates to be 4" high. All plates shall be two (2) inches less full width of door.
- B. Push plates, pull plates, door pulls, and miscellaneous door trim shall be shown in the hardware schedule.

2.9 DOOR STOPS

- A. Doorstops shall be furnished for all doors to prevent damage to doors or hardware from striking adjacent walls or fixtures. Wall bumpers to be Ives WS406/407CCV Series are preferred, but where not practical furnish floor stops Ives FS434 series. Where conditions prohibit the use of either wall or floor type stops, furnish surface mounted overhead stops equal to Glynn Johnson, 450 Series.

2.10 THRESHOLDS AND WEATHERSTRIP

- A. Thresholds and weather-strip shall be as listed in the hardware schedule or as shown on the drawings.

2.11 DOOR SILENCERS

- A. Furnish rubber door silencers equal to Ives SR64 for all new interior hollow metal frames, (2) per pair and (3) per single door frame.

2.12 COMPONENTS

- A. General Hardware Requirements: Where not specifically indicated, comply with applicable ANSI A156 standard for type of hardware required. Furnish each type of hardware with accessories as required for applications indicated and for complete, finished, operational doors.
 - 1. Templates: Furnish templates or physical hardware items to door and frame manufacturers sufficiently in advance to avoid delay in Work.
 - 2. Reinforcing Units: Furnished by door and frame manufacturers; coordinated by hardware supplier or hardware manufacturer.
 - 3. Fasteners: Furnish as recommended by hardware manufacturer and as required to secure hardware.
 - a. Finish: Match hardware item being fastened.
 - 4. Fire Ratings: Provide hardware with UL or Warnock Hersey listings for type of application involved.
 - 5. Electrical Devices: Make provisions and coordinate requirements for electrical devices and connections for hardware.

2.13 ACCESSORIES

- A. Lock Trim: Furnish levers with escutcheon plate as indicated in Schedule as selected from manufacturer's full range of levers and roses.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Division 1 – General Requirements: Coordination and project conditions.
- B. Verify doors and frames are ready to receive door hardware and dimensions are as indicated on shop drawings and as instructed by manufacturer.
- C. Verify electric power is available to power operated devices and is of correct characteristics.

3.2 INSTALLATION

- A. Coordinate mounting heights with door and frame manufacturers. Use templates provided by hardware item manufacturer.
- B. Mounting Heights From Finished Floor to Center Line of Hardware Item: Comply with manufacturer recommendations and applicable codes where not otherwise indicated.
 - 1. Locksets: 38 inch.
 - 2. Push/Pulls: 42 inch.

3. Dead Locks: 48 inch.
4. Push Pad Type Exit Devices: 42 inch.
5. Cross Bar Type Exit Devices: 38 inch.
6. Top Hinge: Jamb manufacturer's standard, but not greater than 10 inches from head of frame to center line of hinge.
7. Bottom Hinge: Jamb manufacturer's standard, but not greater than 12-1/2 inches from floor to center line of hinge.
8. Intermediate Hinges: Equally spaced between top and bottom hinges and from each other.
9. Hinge Mortise on Door Leaf: 1/4 inch to 5/16 inch from stop side of door.

3.3 FIELD QUALITY CONTROL

- A. Section 01400 – Quality Control Services: Testing and Inspection Services and Division 1 – General Requirements: Testing, adjusting and balancing.
- B. Supplier to inspect installation and certify hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.4 ADJUSTING

- A. Division 1 – General Requirements: Testing, adjusting, and balancing.
- B. Adjust hardware for smooth operation.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01700 – Project Closeout: Protecting installed construction.
- B. Do not permit adjacent work to damage hardware or hardware finish.

END OF SECTION

SECTION 09260

GYPSUM WALLBOARD ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes metal stud wall framing; metal channel ceiling framing; shaft wall system; gypsum board and joint treatment; cementitious backer board; and acoustic insulation.
- B. Related Sections:
 - 1. Section 06114 - Blocking and Curbing: Blocking for supports.
 - 2. Section 08310 - Access Doors and Panels: Metal access panels.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM C36 - Standard Specification for Gypsum Wallboard.
 - 2. ASTM C475 - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - 3. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board.
 - 4. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.
 - 5. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
 - 6. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.
 - 7. ASTM C1002 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases.
 - 8. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
 - 9. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- B. Gypsum Association:
 - 1. GA 214 - Recommended Levels of Gypsum Board Finish.
 - 2. GA 216 - Application and Finishing of Gypsum Board.
 - 3. GA 600 - Fire Resistance Design Manual Sound Control.
- C. Underwriters Laboratories Inc.:
 - 1. UL - Fire Resistance Directory.

1.3 PERFORMANCE REQUIREMENTS

- A. Conform to applicable code for fire rated assemblies as follows:

Kitchen Renovation
1700 Blount Road, Pompano Beach FL

North Homeless Assistance Center
Gypsum Wallboard Assemblies

1. Fire Rated Partitions: Listed assembly by UL No.
2. Fire Rated Ceiling and Soffits Listed assembly by UL No.
3. Fire Rated Structural Column Framing: Listed assembly by UL No.
4. Fire Rated Structural Beam Framing: Listed assembly by UL No.
5. Fire Rated Shaft Wall Requirements: As indicated on Drawings.

B. Acoustic Attenuation for Identified Interior Partitions: As indicated on Drawings.

1.4 SUBMITTALS

A. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.

B. Product Data: Submit data on metal framing, gypsum board, joint tape and acoustic accessories.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C840, GA-214, GA-216 and GA-600.

B. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

A. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

A. Manufacturers:

1. Celotex Building Products.
2. G-P Gypsum Corp.
3. National Gypsum Co.
4. United States Gypsum Co.
5. Substitutions: Section 01630 – Substitutions and Product Options.

2.2 COMPONENTS

A. Framing Materials:

1. Studs and Tracks: ASTM C645; GA-216 and GA-600; galvanized sheet steel, 0.030 inch, C shape, with knurled faces unless otherwise noted.
2. Shaft Wall Studs and Accessories: As required by UL No.
3. Furring, Framing, and Accessories: ASTM C645; GA-216 and GA-600.
4. Fasteners: ASTM C1002.

5. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.
- B. Gypsum Board Materials:
1. Standard Gypsum Board: ASTM C36; 5/8 inch thick, maximum available length in place; ends square cut, tapered edges.
 2. Fire Rated Gypsum Board: ASTM C36; fire resistive type, UL rated; 5/8 inch thick, maximum available length in place; ends square cut, tapered edges.
 3. Tile Backing Board (At restrooms and as noted on drawings): ASTM C1178, mold resistant complying with ASTM D3273 Fiberglass mat faced, water resistant core. No paper allowed. 1/2" thick or 5/8" Type X Fire Rated. Use 2" wide 10x10 fiberglass mesh tape at all joints, corners and penetrations.

2.3 ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced, thickness as indicated on Drawings.
- B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.
- C. Corner Beads: Metal or metal and paper combination.
- D. Joint Materials: ASTM C475; and GA-216; reinforcing tape, joint compound, adhesive, and water.
- E. Fasteners: ASTM C1002, Type S12 and GA-216.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Division 1 - Administrative Requirements: Coordination and project conditions.
- B. Verify site conditions are ready to receive work and opening dimensions are as indicated on shop drawings.

3.2 EXISTING WORK

- A. Extend existing gypsum board installations using materials and methods as specified.
- B. Repair and remodel existing gypsum board assemblies, which remain or are to be altered.

3.3 INSTALLATION

- A. Metal Stud Installation:
 - 1. Install studs in accordance with ASTM C754, GA-216 and GA-600.
 - 2. Metal Stud Spacing: 16 inches on center.
 - 3. Refer to Drawings for indication of partitions extending stud framing through ceiling to structure above. Maintain clearance under structural building members to avoid deflection transfer to studs. Provide extended leg ceiling runners.
 - 4. Door Opening Framing: Install double studs at doorframe jambs. Install stud tracks on each side of opening, at frame head height, and between studs and adjacent studs.
 - 5. Blocking: Bolt or screw steel channels or fire retardant treated wood blocking to studs. Install blocking for support of wall cabinets, fire extinguisher cabinets, hardware and similar items.

- B. Wall Furring Installation:
 - 1. Erect wall furring for direct attachment to concrete masonry and concrete walls.
 - 2. Erect furring channels vertically; space maximum 16 inches oc, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.

- C. Furring For Fire Ratings: Install furring as required for fire resistance ratings indicated and to GA-600 requirements.

- D. Shaft Wall Framing: In accordance with UL Assembly and GA-600 requirements.

- E. Ceiling Framing Installation:
 - 1. Install in accordance with ASTM C754 and GA-216.
 - 2. Coordinate location of hangers with other work.
 - 3. Install ceiling framing independent of walls, columns, and above ceiling work.
 - 4. Reinforce openings in ceiling suspension system, which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24 inches past each end of openings.
 - 5. Laterally brace entire suspension system.

- F. Acoustic Accessories Installation:
 - 1. Install resilient channels at maximum 24 inches on center. Locate joints over framing members.

 - 2. Place acoustic insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.
 - 3. Install acoustic sealant at gypsum board perimeter at:
 - a. Metal Framing: Two beads.

- b. Seal penetrations of partitions by conduit, pipe, duct work, rough-in boxes, etc.
- G. Gypsum Board Installation:
 - 1. Install gypsum board in accordance with GA-216 and GA-600.
 - 2. Erect single layer standard gypsum board in most economical direction, with ends and edges occurring over firm bearing.
 - 3. Erect single layer fire rated gypsum board with edges and ends occurring over firm bearing.
 - 4. Use screws when fastening gypsum board to metal furring or framing.
 - 5. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials and as indicated on Drawings.
 - 6. Install cementitious backing board over metal studs.
- H. Joint Treatment:
 - 1. Provide finishes in accordance with GA-214 Level:
 - a. Level 1: Above finished ceilings concealed from view and behind wall panel systems concealed from view.
 - b. Level 3: Walls exposed to view.
 - c. Level 4: Ceilings exposed to view.
 - 2. Fill and finish joints and corners of cementitious backing board.

3.4 ERECTION TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from Flat Surface: 1/8 inch in 10 feet.

END OF SECTION

SECTION 09300

TILE

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes ceramic, mosaic and porcelain tile for floor and wall applications.
- B. Related Sections :
 - 1. Section 07920 - Joint Sealers.
 - 2. Section 09260 – Gypsum Board Assemblies

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI A108.1 - Installation of Ceramic Tile, A collection.
 - 2. ANSI A108.10 - Specifications for Installation of Grout in Tilework.
 - 3. ANSI A118.6 - Ceramic Tile Grouts.
 - 4. ANSI A137.1 - Ceramic Tile.
- B. American Society for Testing and Materials:
 - 1. ASTM C847 - Standard Specification for Metal Lath.
 - 2. ASTM C1178 – Coated Glass Mat Backer Board.
- C. Tile Council of America:
 - 1. TCA - Handbook for Ceramic Tile Installation.

1.3 SUBMITTALS

- A. Section 01330 – Shop Drawings, Product Data and Samples
- B. Product Data: Submit instructions for using grouts and mortar.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01700 – Project Closeout: Closeout procedures.
- B. Operation and Maintenance Data: Submit recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with the latest edition of the TCA Handbook and ANSI A108 Series/A118 Series.

1.6 QUALIFICATIONS

- A. Installer: Company specializing in performing Work of this section with minimum three years documented experience and approved by tile manufacturer.

1.7 PRE-INSTALLATION MEETINGS

- A. Section 01040 – Project Coordination: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 – Material and Equipment: Product storage and handling requirements.
- B. Protect mortars and grouts from freezing or overheating.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Section 01600 – Material and Equipment.
- B. Do not install mortars and grouts in unventilated environment.
- C. Maintain ambient and substrate temperature of 50 degrees F (10 degrees C) during installation of mortar materials.

1.10 EXTRA MATERIALS

- A. Section 01700 – Project Closeout: Spare parts and maintenance products.
- B. Supply 50 sq ft of each size, color, and surface finish of tile specified and 10 pieces of each type of trim.

PART 2 PRODUCTS

2.1 TILE

- A. Manufacturers:
 - 1. Dal-Tile International.
 - 2. Or approved equal.
 - 3. Substitutions: Section 01630 – Substitutions and Product Options.

2.2 ACCESSORIES

- A. Mortar Materials:
 - 1. Tile Wall: Mortar Bond Coat Materials:
 - a. Dry-Set Portland Cement type: ANSI A118.1.
 - b. Latex-Portland Cement type: ANSI A118.4.

B. Grout Materials:

1. Wall Standard Grout: Portland cement type as specified in ANSI A118.6
 - a. Color: white.
 - b. Grout joint size as indicated on drawings

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01040 - Project Coordination: General coordination provisions.
- B. Verify surfaces are ready to receive work.

3.2 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

3.3 EXISTING WORK

- A. Section 01700 - Execution Requirements: Requirements for maintenance service.
- B. Prepare and remodel existing tile installations using materials and methods as specified.
- C. Clean and repair existing tile which remains. Thoroughly chemically clean existing tile and grout which remains.

3.4 INSTALLATION

- A. Install tile and grout in accordance with applicable requirements of ANSI A108.1 through A108.10, and TCNA Handbook recommendations.
- B. Lay tile to pattern indicated to align with existing tile. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor, base and wall] joints.
- D. Place tile with joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.
- E. Form internal angles and external angles to match existing.

- F. Sound tile after setting. Replace hollow sounding units.
- G. Keep expansion control joints free of grout. Apply sealant to joints.
- H. Allow tile to set for a minimum of 48 hours prior to grouting.
- I. Grout tile joints.
- J. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.
- K. Installation - Floors - Thin-Set Methods:
 - 1. Over interior concrete substrates, install in accordance with TCA Handbook, dry-set or latex-portland cement bond coat with standard grout.
- L. Installation - Wall Tile:
 - 1. Over glass mat backer board or gypsum wallboard as detailed on drawings install in accordance with TCA Handbook Method.
 - 2. Over interior concrete and masonry install in accordance with TCA Handbook, thin-set with dry-set or latex-portland cement bond coat.

3.5 CLEANING

- A. Section 01740 - Cleaning: Final cleaning.
- B. Clean tile and grout surfaces. Thoroughly chemically clean all new and existing tile and grout surfaces.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01760 - Protection of installed construction.
- B. Do not permit traffic over finished floor surface for 4 days after installation.

3.7 TILE SCHEDULE

- A. As indicated on the drawings

END OF SECTION

SECTION 09511

ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and material Samples.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: Provide materials and construction identical to those tested in assemblies per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
- B. Seismic Standard: Provide acoustical panel ceilings designed and installed to withstand the effects of earthquake motions according to the following:
 - 1. CISCA's Recommendations for Acoustical Ceilings: Comply with CISCA's "Recommendations for Direct-Hung Acoustical Tile and Lay-in Panel Ceilings - Seismic Zones 0-2."
 - 2. CISCA's Guidelines for Systems Requiring Seismic Restraint: Comply with CISCA's "Guidelines for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies - Seismic Zones 3 & 4."
 - 3. UBC Standard 25-2, "Metal Suspension Systems for Acoustical Tile and for Lay-in Panel Ceilings."

2.2 ACOUSTICAL PANELS

- A. Basis of Design Product:
 - 1. SHEETROCK Lay-in Ceiling Panel, PVC-FREE, as manufactured by:
USG Interiors, LLC
550 West Adams Street
Chicago, Illinois 60661

or
 - 2. Equal as approved by the Architect.

- B. ASTM E1264: Type XX, Pattern G
- C. Surface-Burning Characteristics: ASTM E 1264, Class A materials, tested per ASTM E 84.
- D. Edge Detail: Square.
- E. Thickness: 1/2 inch.
- F. Modular Size: 24 by 48 inches.

2.3 CEILING SUSPENSION SYSTEM

- A. Basis of Design Product: 15/16 inch face, direct-hung system; ASTM C 635, heavy-duty structural classification.
 - 1. DONN ZXLA Suspension System, as manufactured by:
USG Interiors, LLC
550 West Adams Street
Chicago, Illinois 60661

or
 - 2. Equal as approved by the Architect.
- B. Attachment Devices: Sized for 5 times the design load indicated in ASTM C 635, Table 1, Direct Hung, unless otherwise indicated.
- C. Wire Hangers, Braces, and Ties: Zinc-coated carbon-steel wire; ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 - 1. Size: Provide yield strength at least 3 times the hanger design load (ASTM C 635, Table 1, Direct Hung), but not less than 0.106-inch diameter wire.
- D. Seismic Struts: Manufacturer's standard product designed to accommodate seismic forces.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Ceiling Suspension System Installation: Comply with ASTM C 636 and CISCA's "Ceiling Systems Handbook."
 - 1. Fire-Rated Assembly: Install fire-rated ceiling systems according to tested fire-rated design.

- B. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
- C. Arrange directionally patterned acoustical panels as indicated on Drawings.

END OF SECTION

SECTION 09672
QUARTZ FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Painting (Section 09900)

1.2 SUMMARY

- A. Work described in this section includes surface preparation and installation of Silikal reactive resin industrial floor system.
- B. See drawings for locations and quantities.

1.3 REFERENCE STANDARDS

- A. United States Department of Agriculture (USDA) and (Food and Drug Administration (FDA) authorization) for incidental contact with foodstuffs.

1.4 SUBMITTALS

- A. Acceptance Sample: As required by owner, one foot square (1 ft. by 1 ft.) sample of the specified acrylic flooring system applied to hardboard or similar backing for rigidity and ease of handling.
- B. Manufacturer's Literature: Descriptive data and specific recommendations for surface preparation, mixing, and application of materials.
- C. Manufacturer's Material Safety Data Sheets (MSDS) for each respective product to be used.
- D. Cleaning and Maintenance instructions.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Acceptable manufacturer: Silikal GmbH, Germany or equal as approved by the Architect.
- B. Applicator Qualifications:
 - 1. Pre-qualification requirements: Only approved applicators, licensed by the manufacturer shall be considered for qualification.
 - 2. Each approved applicator shall have been qualified by the Manufacturer as knowledgeable in all phases of surface preparation.
 - 3. Each approved applicator must have three (3) years experience of installing resinous flooring systems and submit a list of five projects/references as a prequalification

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Quartz Flooring

requirement. At least one of the five projects/ references must be of equal size, quantity, and magnitude to this project as a prequalification requirement. Owner has the option to personally inspect the projects/references to accept or reject any of the Contractors prior to bid time as a prequalification requirement.

C. Subcontractor Qualifications:

1. The only approved and specified subcontractors for this resurfacing work shall be for shot-blast cleaning of the concrete substrate.

D. Acceptance Sample:

1. Representative sample of the specified flooring system shall be submitted to the Owner prior to the bidding phase of the project. All bidders shall inspect the "acceptance sample" before submitting their bids.
2. The installed flooring system shall be similar to the acceptance sample in thicknesses of respective film layers, color, texture, overall appearance and finish.

E. Bond Testing:

1. Surface preparation efforts shall be evaluated by conducting Bond Tests at the site prior to application of the flooring system(s).
2. Part 3 or consult with Material Manufacturer for specific procedure.

F. Pre-Job Meeting

1. Owner requires a Pre-Job Meeting with representatives of Owner, Contractor/Applicator, and Material Manufacturer in attendance. The agenda shall include a review and clarification of this specification, application procedures, quality control, inspection and acceptance criteria, and production schedules. Applicator is not authorized to proceed until this meeting is held or waived by Owner.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. All material shall be delivered in original Manufacturer's sealed containers with all pertinent labels intact and legible.
- B. Store materials in dry protected area between 25° and 80° Fahrenheit. Keep out of direct sunlight. Protect from open flame; keep all containers grounded.
- C. Follow all Manufacturer's specific label instructions and prudent safety practices for storage and handling.

1.7 PROJECT CONDITIONS

- A. Material, air, and surface temperatures shall be in the range of 32° to 85° Fahrenheit during application and cure, unless a special formulation is being used and Manufacturer has been consulted.
- B. Relative humidity in the specific location of the application shall be less than 85 percent and the surface temperature shall be at least 5 degrees above the dew point.
- C. Concrete shall have a moisture emission rate of no more than 5 lbs. per 1000 sq. ft. per 24 hour period as determined by proper Calcium Chloride Testing. Concrete R/H must be 85% or less as measured by protimeter. Readings greater than 5 by the Calcium Chloride method or 85% by protimeter, may require a preliminary treatment with Silikal RE40.
- D. Foodstuffs are the responsibility of the Owner and shall have been removed from the area of application by the Owner or his representatives.

1.8 WARRANTY

- A. Silikal warrants that materials shipped to buyers are at the time of shipment substantially free from material defects and will perform substantially according to Silikal published literature if used strictly in accordance with Silikal's prescribed procedures and prior to expiration date.
- B. Silikal's liability with respect to this warranty is strictly limited to the value of the material purchased.
- C. Silikal has no responsibility for the application and processing of products and is under no circumstances liable to any third party whatsoever.
- D. Contractor shall provide a one-year warranty of performance of materials and installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Silikal GmbH, Germany (Basis of Design Product)
 - 2. Equal as approved by the Architect.

2.2 SYSTEM DESCRIPTION

- A. The Silikal 368 CQ is a 4-6mm (3/16"-1/4") thick troweled surfacing composite of Silikal 100% reactive binder resin and Silikal colored quartz aggregate with specified Silikal primer and topcoat.
- B. The Silikal coating system shall cure completely and be available to normal operations in no more than 90 minutes at Temperatures as low as 0 °C. after application of the final coat.
- C. The finished Silikal floor coating system shall be uniform in color combinations, texture, and appearance. All edges that terminate at walls, floor discontinuities, and other embedded items shall be sharp, uniform, and cosmetically acceptable with no thick or ragged edges. The Contractor shall work out an acceptable masking technique to ensure the acceptable finish of all edges.
- D. See Part 3 for number and thicknesses of each coat/layer in each system.
- E. All resins must be manufactured and tested under an ISO 9001 registered quality system and ISO 14001 ecology management system.

2.3 MATERIALS

- A. Silikal368 CQ Tough Decorative Quartz Flooring:
 - 1. Moisture Vapor Treatment (if required) Silikal RE40
 - 2. Saturating Primer/Silikal Coat: Silikal R41 with Additive I
 - 3. Patching/Sloping (if required) Silikal R17 Polymer Concrete
 - 4. Coving (if required): Silikal HK20 with Silikal filler CQ

5. Topping: Silikal RV368 Quartz, consisting of Silikal RV368 resin and Silikal CQ
 6. Topcoat(s): Silikal R81 Colorless Silikal Topcoat Resin.
 7. Silikal CQ for broadcasting:
 8. Aluminum Oxide (if required)
- B. Product Performance Criteria
1. Silikal RE40
 - a. Percentage Reactive Resin 100%
Percentage Solids 100%
 - b. Water Pressure Resistance (3 days at 72 psi) Passed
 - c. Resistance to Diffusion Against H₂O 0.3g/m² • day
 - d. Tensile Bond Strength..... 475 psi
 2. Silikal R41 With Additive I
 - a. Percentage Reactive Resin 100%
Percentage Solids 100%
 - b. Water Absorption, Wt. % (ASTM D570): less than 0.06
 - c. Tensile Strength, psi (ASTM D638)..... 3,550 psi.
 - d. Tensile Modulus, psi X 10 to the 5th (ASTM D638): 2.1
 - e. Coefficient of Thermal Expansion, in./in./deg. F (ASTM D696): 0.000035
 - f. Electrical Resistivity (ASTM D257):
Volume Resistance, ohm-cm: 1015
Surface Resistance, ohm..... 1012
 - g. Water Vapor Transmission (DIN 53122), g/cm-hr-mm Hg X 10-9: 1.4
 3. Silikal R17 Polymer Concrete
 - a. Percentage of reactive resin 100%
 - b. Water Absorption, Wt. % (ASTM D570): 0.02
 - c. Tensile Strength, psi (ASTM D638)..... 4,000 psi.
 - d. Tensile Modulus, psi X 10 to the 5th (ASTM D638):..... 1.2
 - e. Coefficient of Thermal Expansion, in./in./deg. F (ASTM D696) psi x10-6: 18
 - f. Compressive Strength, psi (ASTM C39)..... 9,200 psi.
(ASTM C109)..... 11,000 psi.
 4. Silikal RV368 CQ Topping
 - a. Percentage of reactive resin: 100%
Percentage of solids: 100%
 - b. Water Absorption, Wt. % (ASTM D570): 0.04
 - c. Compressive Strength, psi (ASTM C109): 3,500-4,000 psi.
(ASTM D695): 3,600 psi.
 - d. Tensile Strength, psi (ASTM D638): 1,000-1,200 psi.
 - e. Flexural Strength, psi (ASTM D790): 1,500-2,000 psi.
 - f. Coefficient of Thermal Expansion, in./in./deg. F (ASTM D696): 0.000019
 - g. Electrical Resistivity, (ASTM D257) Volume Resistance, ohm-cm: 1014
 - h. Chemical Resistance, ASTM D543:
Effect of weak acids: none
Effect of strong acids:..... slight
Effect of alkalis:..... none
Effect of salt solutions:..... none
Effect of oil, grease:..... none
Effect of sunlight (UV radiation):..... none

- 5. Silikal R81 Colorless Topcoat Resin
 - a. Percentage Reactive Resin:.....100%
 - Percentage Solids:.....100%
 - b. Water Absorption, Wt. % (ASTM D570):0.5
 - c. Tensile Strength, psi (ASTM D638):.....3,555 psi.
 - d. Tensile Modulus, psi (ASTM D638):.....210,000 psi.
 - e. Coefficient of Thermal Expansion (ASTM D696) in./in./deg. F:.....0.000035
 - f. Electrical Resistivity (ASTM D257):
 - Volume Resistance, ohm-cm:1015
 - Surface Resistance, ohm:.....1012
 - g. Water Vapor Transmission (DIN 53122) g/cm-hr-mm Hg X 10-9:.....1.43
 - h. Chemical Resistance, ASTM D543:
 - Effect of weak acids:.....none
 - Effect of strong acids:slight
 - Effect of alkalis:.....none
 - Effect of salt solutions:.....none
 - Effect of oil, grease:none
 - Effect of sunlight (UV radiation): none
- C. Product Installation and Application Criteria for All Silikal Material Systems Excepting Moisture Vapor Treatment:
 - 1. Pot Life at 68° F.:.....10-15 minutes
 - 2. Cure Time at 68° F.:.....60 minutes
 - 3. Recoat Time at 68° F.:.....60-90 minutes
- D. Mixes: Follow manufacturer's prescribed procedures and recommendations.

PART 3 - EXECUTION

3.1 PREWORK INSPECTION

- A. Examine all surfaces to be coated with Silikal material systems and report to the Owner and/or Architect any conditions that will adversely affect the appearance or performance of these coating systems and that cannot be put into acceptable condition by the preparatory work specified below.
- B. Do not proceed with application until the surface is acceptable or authorization to proceed is given by the Architect.
- C. In the event that Applicator has employed all acceptable methods of surface preparation and cannot remedy adverse conditions that would lead to failure of the installation, Applicator shall withdraw from the contract and Owner will be financially responsible only for preparation efforts.

3.2 GENERAL

- A. Material storage area must be selected and approved by Applicator and Owner or his representative.
- B. Owner will furnish electricity and water for use by Applicator.
- C. If existing ventilation is inadequate, Applicator will provide sufficient ventilation to allow complete air exchange every five (5) minutes.

- D. General Contractor shall provide means for disposal of construction waste.
- E. Applicator shall protect adjacent surfaces not to be coated with masking and/or covers. Owner's equipment shall be protected from dust, cleaning solutions, and flooring materials.

3.3 PREPARATION

A. Surface Preparation - General

1. Concrete substrate must be clean and dry. Dislodge dirt, mortar spatter, paint overspray, and other dry surface accumulations and contamination by scraping, brushing, sweeping, vacuuming, and/or compressed air blowdown.
2. Surfaces that are heavily contaminated shall be cleaned with the appropriate degreaser, detergent, or other appropriate cleaner/surfactant followed by thoroughly rinsing with fresh water to remove the accumulation prior to mechanical cleaning efforts. Mechanical cleaning will not remove such deposits, but only drive them deeper.
3. Concrete shall have a moisture emission rate of no more than 5 lbs. per 1000 sq. ft. per 24 hour period as determined by proper Calcium Chloride Testing and no more than 85% R/H as measured by Protimeter.

B. Bond Testing

1. The applicator shall evaluate all surface preparation by conducting bond tests at strategic locations.
2. Mix six (6) ounces of the primer to be used in the application with 5% by volume Silikal Powder Hardener. Add #10-#12 mesh, dry quartz sand until an easily trowelable mixture is obtained. Apply palm sized patties 1/8" to 1/4" thick.
3. After one (1) hour at (68° F.), patties must be cured tack-free and cooled to ambient temperature of concrete. Remove patties with hammer and chisel and examine fracture/delamination plane. Concrete with fractured aggregate must be attached to the entire underside of the patty.
4. If only laitance or a small amount of concrete is attached or if interface between patty and substrate is tacky, further substrate preparation is required.
5. If further surface preparation is required, bond tests shall be conducted again when this has been completed.
6. If no amount or kind of surface preparation produces satisfactory bond tests, the applicator shall report that to the Owner, Architect, and Manufacturer.

C. Mechanical Surface Preparation and Cleaning

1. All accessible concrete floor surfaces shall be mechanically blast cleaned using a mobile steel shot, dust recycling machine such as BLASTRAC®, or approved equivalent. All surface and embedded accumulations of paint, toppings, hardened concrete layers, laitance, power trowel finishes, and other similar surface characteristics shall be completely removed leaving a bare concrete surface having a profile similar to 40 grit sandpaper and exposing the upper fascia of concrete aggregate.
2. Floor areas inaccessible to the mobile blast cleaning machines shall be mechanically abraded to the same degree of cleanliness, soundness, and profile using vertical disc scarifiers, star wheel scarifiers, needle guns, scabblers, or other suitably effective equipment.

3. After blasting, traces or accumulations of spent abrasive, laitance, removed toppings, and other debris shall be removed with brush or vacuum.
4. Conduct Bond Tests to check adequacy of surface preparation.
5. Application of the respective specified material system(s) must be completed before any water or other contamination of the surface occurs.

3.4 INSTALLATION

- A. Application of Silikal 368 CQ flooring system consists of:
 1. applying moisture vapor treatment (if required)
 2. applying the primer,
 3. applying coving,
 4. performing patching and sloping with polymer concrete (if required),
 5. re-priming polymer concrete areas
 6. applying the topping, broadcasting the quartz
 7. applying the topcoat(s),

Time for curing (45 - 60 minutes) shall be allowed between each coat.
Thicknesses are specified below in Coating Schedule.
- B. Open only the containers of component materials to be use in each specific application as needed. Refer to Manufacturer's data sheets for pot-life/temperature relationship to determine size of batches to mix and mix ratios for each respective coat of the system.
- C. Measure, add, and mix the Silikal BP-Powder Hardener into the respective resin components in the proportions recommended by the Material Manufacturer. Pot life is short, so mix only as much material at a time as can be easily and efficiently applied.
- D. Moisture Vapor Treatment (if required)
 1. Mix moisture vapor treatment products as recommended by manufacturer.
 2. Pour out all resin onto the concrete surface and spread it with a squeegee. After a short operating time (approximately 10 minutes) the excess must be removed with the squeegee. The remaining resin can be rolled out with a lint free resin proof roller. Resin films as well as the building of puddles have to be avoided! The waiting time between the coats depends on the absorbency of the substrate and is normally between one and three hours. Before applying the second coat if required, the impregnation of the first coat into the substrate should be evident.
 3. If required, repeat the above process. During application of the treatment take care that there is no film building at the surface. The surface texture has to be maintained after every step.
- E. Prime Coat
 1. Mix primer components according to manufacturer's instructions.
 2. Pour the mixture batches onto the floor surface and use a 9" or 18" wide, 1/2" - 3/4" thick-napped, solvent resistant paint roller to roll out the material at a rate of 100 sq. ft./ gal. to form a uniform, continuous film, ensuring that all crevices, cracks, other surface discontinuities have been saturated and coated. Use a paint brush to reach areas inaccessible to the roller. Work quickly and deliberately; the pot life is short (10 -15 minutes). Do not leave any "puddles"; roll out any such accumulations.
 3. Allow the primer coat to cure.
 4. If any of the concrete has absorbed all of the primer or if the concrete still has a dry look, reprime these areas before applying the next layer.

- F. Coving
 - 1. Surface Preparation
 - a. If concrete walls are to be painted prior to installation of cove base, the bottom portion of the walls shall remain uncoated to the height of the cove base to insure a proper bond to the concrete wall.
 - b. If walls are constructed of a non-compatible material or if a coating exists, a backer board of ½” cement board cut to the desired height of the cove base needs to be installed. The top of the backer board should be cut at a 45° angle to create a “beveled” edge.
 - c. If a backer board needs to be installed it shall be fastened using a high grade construction adhesive as well as counter sunk screws or concrete masonry anchors.
 - 2. System Description
 - a. Cove base shall be installed according to manufacturer’s recommendations and shall be:
 - 1) Application area requires prime coat according to 3.04.02
 - 2) Trowel-On Cove Base consisting of a trowel applied radius/base mix with a termination strip installed at the top of the base.
 - b. Cove base will receive a broadcast and top coat consistent with flooring system.
- G. Patching/Sloping (If Required)
 - 1. Mix polymer concrete components as recommended by the Material Manufacturer.
 - 2. Use mixture to repair any damaged concrete, or to slope any areas as needed.
 - 3. Once cured, material must be re-primed before next layer is applied.
- H. Topping
 - 1. Size the batches, and mix according to Manufacturer’s instructions. The entire batch should be poured and spread at once, i.e., do not let material set in pail.
 - 2. Spread the topping material with a gage rake set to a depth of 1/8”. Lightly trowel to a uniform thickness of 1/8” as necessary.
 - 3. If necessary, roll with a porcupine roller to release trapped air.
 - 4. Broadcast colored quartz into the fresh material before it begins to cure. Broadcast by hand, or use a backpack type blower or sand blast pot to achieve an even broadcast. The quartz must ‘rain’ down and not be thrown into the wet base coat.
 - 5. Allow the topping to cure.
 - 6. Remove excess quartz by sweeping, “blow-down”, and/or vacuuming.
- I. Top Coat
 - 1. Apply with clean rollers at a rate of 80 - 90 sq. ft./gal. in the same way as the Silikal Primer was applied as described in Paragraph 3.04.02.
 - 2. (If Required) Broadcast aluminum oxide, or other suitable material into wet topcoat resin; size and rate as determined by owner.
 - 3. Allow topcoat to cure. Floors without aluminum oxide broadcast may be lightly sanded if required.
 - 4. Vacuum all dust, paying particular attention to edges and corners.
- J. Second Top Coat
 - 1. Apply with clean rollers at a rate of 100 - 125 sq. ft./gal. in the same way as the Silikal Primer was applied as described above.
 - 2. Allow topcoat to cure.

3.5 FIELD QUALITY CONTROL/INSPECTION

- A. Applicator shall request acceptance of surface preparation from the Architect before application of the prime/seal coat.
- B. Applicator shall request acceptance of the prime coat from the Architect before application of subsequent specified materials.

3.6 CLEANING

- A. Applicator shall remove any material spatters and other material that is not where it should be. Remove masking and covers taking care not to contaminate surrounding area.
- B. Applicator shall repair any damage that should arise from either the application or clean-up effort.

3.7 COATING SCHEDULE

- A. Moisture vapor treatment shall be Silikal RE40 application rate shall be approximately 220 sq. ft. per gallon (approx. 7 mils)
- B. Primer shall be Silikal R41 with Additive I Application rate shall be approx. 100 sq.ft. per gallon (approx. 16 mils).
- C. Patching/Sloping material shall be R17
- D. Coving shall be Silikal HK 20 per manufacturers recommendations.
- E. Body coat shall be Silikal RV368 CQ, applied with a gage rake set at 1/8" for a rate of 40 sq. ft. per batch. Colored quartz to be broadcast into the uncured topping (optional). Broadcast the quartz at the rate of 0.5 – 0.75 pounds per sq. ft.
- F. Clear topcoat shall be Silikal R81; apply at the rate of 80 - 90 sq. ft. per gallon for the first coat and 90 - 120 sq. ft. per gallon for the second application.

END OF SECTION

SECTION 09900
PAINTS AND COATINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and field application of paints and other coatings.
- B. Related Sections:
 - 1. Division 1 – General Requirements.
 - 2. Section 15047 - Mechanical Identification.
 - 3. Section 16030 - Electrical Identification.

1.2 REFERENCES

- A. American Society for Testing and Materials:
 - 1. ASTM D16 - Standard Terminology Relating to Paint, Varnish, Lacquer, and Related Products.
 - 2. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials.
- B. Painting and Decorating Contractors of America:
 - 1. PDCA - Architectural Painting Specification Manual.
- C. SSPC: The Society for Protective Coatings:
 - 1. SSPC - Steel Structures Painting Manual.

1.3 DEFINITIONS

- A. Conform to ASTM D16 for interpretation of terms used in this section.

1.4 SUBMITTALS

- A. Section 01330 – Shop Drawings, Product Data and Samples: Submittal procedures.
- B. Product Data: Submit data on finishing products.
- C. Samples:
 - 1. Submit two painted samples, illustrating selected colors and textures for each color and system selected with specified coats cascaded. Submit on tempered hardboard 6 x 6 inch in size.
- D. Manufacturer's Installation Instructions: Submit special surface preparation procedures and substrate conditions requiring special attention.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01700 – Project Closeout: Closeout procedures.
- B. Operation and Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

1.6 QUALIFICATIONS

- A. Applicator: Company specializing in performing work of this section with minimum 3 years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Division 1 – General Requirements: Product storage and handling requirements.
- B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- C. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- D. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Division 1 – General Requirements.
- B. Do not apply materials when surface and ambient temperatures are outside temperature ranges required by paint product manufacturer.
- C. Do not apply exterior coatings during rain or snow when relative humidity is outside humidity ranges, or moisture content of surfaces exceed those required by paint product manufacturer.
- D. Minimum Application Temperatures for Latex Paints: 45 degrees F (7 degrees C) for interiors; 50 degrees F (10 degrees C) for exterior; unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80ft candle (860 lx) measured mid-height at substrate surface.

1.9 SEQUENCING

- A. Section 01010 – Summary of Work: Work sequence.

- B. Sequence application to the following:
 - 1. Do not apply finish coats until paintable sealant is applied.

1.10 EXTRA MATERIALS

- A. Division 1 – General Requirements: Spare parts and maintenance products.
- B. Supply 5 gallons of each color, type and surface texture; store where directed.
- C. Label each container with color, type, texture and room locations in addition to manufacturer's label.

PART 2 PRODUCTS

2.1 PAINTS AND COATINGS

- A. Manufacturers: Paint and Primer Sealers
 - 1. Benjamin Moore.
 - 2. Coronado Paints.
 - 3. Devoe Paint Co.
 - 4. Duron Inc.
 - 5. ICI Paints World Group.
 - 6. Pratt and Lambert.
 - 7. Sherwin Williams.
 - 8. Substitutions: Section 01630 – Substitutions and Product Options.

2.2 COMPONENTS

- A. Coatings: Ready mixed, except field catalyzed coatings. Prepare coatings:
 - 1. To soft paste consistency, capable of being readily and uniformly dispersed to homogeneous coating.
 - 2. For good flow and brushing properties.
 - 3. Capable of drying or curing free of streaks or sags.
- B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve finishes specified; commercial quality.
- C. Patching Materials: Latex filler.
- D. Fastener Head Cover Materials: Latex filler.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Division 1 – General Requirements: Coordination and project conditions.

- B. Verify surfaces and substrate conditions are ready to receive Work as instructed by product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report conditions capable of affecting proper application.
- D. Test shop applied primer for compatibility with subsequent cover materials.
- E. Measure moisture content of surfaces using electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 1. Plaster and Gypsum Wallboard: 12 percent.
 2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
 3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
 4. Concrete Floors: 8 percent.

3.2 PREPARATION

- A. Surface Appurtenances: Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
- B. Surfaces: Correct defects and clean surfaces capable of affecting work of this section. Remove or repair existing coatings exhibiting surface defects.
- C. Marks: Seal with shellac those which may bleed through surface finishes.
- D. Impervious Surfaces: Remove mildew by scrubbing with solution of tetra-sodium or tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- E. Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.
- F. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
- G. Concrete Floors: Remove contaminations, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
- H. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.
- I. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- J. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with solution of tri-sodium phosphate; rinse well and

allow to dry. Remove stains caused by weathering of corroding metals with solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

- K. Uncoated Steel and Iron Surfaces: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand or power tool wire brushing; clean by washing with solvent. Apply treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.
- L. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
- M. Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.
- N. Metal Doors Scheduled for Painting: Prime metal door top and bottom edge surfaces.

3.3 EXISTING WORK

- A. Extend existing paint and coatings installations using materials and methods compatible with existing installations and as specified.

3.4 APPLICATION

- A. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- B. Apply each coat to uniform appearance. Apply each coat of paint slightly darker than preceding coat unless specified otherwise.
- C. Sand wood and metal surfaces lightly between coats to achieve required finish.
- D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- E. Finishing Mechanical And Electrical Equipment:
 - 1. Refer to Division 22, 23, and 26 for schedule of color coding and identification banding of equipment, duct work, piping, and conduit.
 - 2. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets and collars and supports, except where items are shop finished.
 - 3. Paint interior surfaces of air ducts visible through grilles and louvers with one coat of flat black paint to visible surfaces. Paint dampers exposed behind louvers and grilles to match face panels.

4. Paint exposed conduit and electrical equipment occurring in finished areas.
5. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.
6. Color code equipment, piping, conduit, and exposed duct work in accordance with requirements indicated and color schedule. Color band and identify with flow arrows, names and numbering.
7. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.5 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Control Services: Testing and Inspection Services.

3.6 CLEANING

- A. Division 1 – General Requirements: 01740 Cleaning.
- B. Collect waste material which may constitute fire hazard, place in closed metal containers, and remove daily from site.

3.7 SCHEDULE - INTERIOR SURFACES

- A. General : Naming of manufacturers and model numbers is to indicate type and quality of items required and is not intended to limit competition. Paints produced by other listed manufacturers, that meet or exceed the properties of the specified products may be proposed for use on this project.
 1. Manufacturer specified : Benjamin Moore & Co..
- B. Concrete, Concrete Block :
 1. One coat of block filler : Benjamin Moore & Co. #206 Super Spec Block Filler
 2. Two coats of latex eggshell : Benjamin Moore & Co. #N537 Ultra Spec 500 Low Sheen
- C. Steel - Unprimed:
 1. One coat of alkyd primer : Benjamin Moore & Co. P06 Alkyd Metal Primer
 2. Two coats of alkyd enamel, semi-gloss : Benjamin Moore & Co. P24 Alkyd Direct To Metal (DTM) Semi-Gloss
- D. Steel - Primed:
 1. Touch-up with alkyd primer : Benjamin Moore & Co. P06 Alkyd Metal Primer
 2. Two coats of alkyd enamel, semi-gloss : Benjamin Moore & Co. P24 Alkyd Direct To Metal (DTM) Semi-Gloss
- E. Steel - Galvanized:

1. Touch up compatible galvanize primer. Benjamin Moore & Co. P04 Acrylic Metal Primer
 2. Two coats of alkyd enamel, semi-gloss : Benjamin Moore & Co. P24 Alkyd Direct To Metal (DTM) Semi-Gloss
- F. Concrete Floors:
1. Two coats of acrylic clear sealer over prepared substrate: Benjamin Moore & Co. P27 Clear Acrylic Sealer
- G. Gypsum Board and Plaster Walls:
1. One coat of latex primer sealer : Benjamin Moore & Co. N534 Ultra Spec Primer
 2. Two coats of latex acrylic or enamel eggshell : Benjamin Moore & Co. # N537 Ultra Spec 500 Low Sheen
- H. Aluminum – Ceiling Grid
1. One coat etching primer – STIX XA05
 2. Two coats of matte finish – N536 Ultra Spec 500 Flat finish or Regal Select 548 Matte Finish

3.8 EXTERIOR PAINT SCHEDULE

- A. Galvanized Metal:
1. Paint System and Finish: Two coats over prime coat; semi-gloss finish.
 - a. Prime Coat: Spot prime using a rust-inhibiting primer formulated for priming zinc-coated steel and compatible with finish paint system indicated.
 - 1) Manufacturers and Products:
 - a. Benjamin Moore; P04 Acrylic Metal Primer.
 - b. Finish Coats: Semi-gloss.
 - 1) Manufacturers and Products:
 - c. Benjamin Moore; P29 Acrylic DTM Semi-Gloss Enamel
- B. Poured-In-Place Concrete and Concrete Unit Masonry:
1. Paint System and Finish: Acrylic; two finish coats over block filler/primer; low lustre finish.
 2. Block Primer: Benjamin Moore Moorcraft Super Craft Latex Block Filler #285
Finish Coats: Benjamin Moore & Co. Premium: Aura, Low Lustre, low voc, #634.
- C. Architectural Precast Concrete:
1. Benjamin Moore & Co. P27 Clear Acrylic Sealer

3.9 PAINT COLOR SCHEDULE

- A. See Finish Legend on Sheet A-4.
- B. As selected by the Architect where not indicated on the drawings.

END OF SECTION

PROJECT MANUAL
FOODSERVICE EQUIPMENT

Broward Country Kitchen

Prepared By:

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SECTION 114000 - FOODSERVICE EQUIPMENT

PART 1 - GENERAL

1.1 SCOPE

- A. The work referred to in this section consists of furnishing all labor and material required to provide and deliver all equipment hereinafter specified into the building, uncrate, assemble, hang, set in place, level, and completely install, exclusive of final utility connections.
- B. Coordinate but do not install (unless specifically directed to do so in the technical specifications) Owner and Vendor-supplied equipment noted on the drawings or in the specifications as NIKEC. Show on roughing in plans the sizes, utilities, and other requirements as furnished in the Specifications, by Owner or appropriate supplier in submittals as if the equipment is contractor furnished.
- C. Coordinate and show sizes, utilities, and other requirements as determined by physical inspection for equipment noted as existing to be reused. Include costs for marking, removing, storing, cleaning, redelivering and installing such equipment. All requirements within the project manual apply to reused equipment except warranty as if contractor furnished including but not limited to code compliance and accessories necessary to conform with the new application.

1.2 SUBMITTALS

- A. Upon award of Contract, furnish the Architect with reproducible copies of the following drawings, in accordance with the approved project schedule, which shall be made on sheets equal in size and matching the bid set drawing size. Reproduced copies of bid documents will not be accepted for this purpose in any fashion.
 - 1. Equipment specified for fabrication shall be detailed and fully dimensioned to a minimum scale of $3/4" = 1'-0"$ (1:20) for plan and elevation views and $1-1/2" = 1'-0"$ (1:10) for sections.
 - 2. Prepare separate electrical and mechanical dimensioned rough-in drawings at $1/4" = 1'-0"$ (1:50) showing exact point of penetration of floors, walls, and ceilings for all services required to operate the equipment that the Contractor shall furnish, including the requirements for Contractor supplied and installed refrigerant and beverage piping line runs. These drawings shall also show exact locations of final connections to equipment. Indicate floor drains, floor sinks, receptacles, lights, and other special conditions related to the equipment known to the Contractor but provided under other Sections.
 - 3. Dimensioned drawings shall be submitted showing the location and size of all bases, depressions, grease interceptors, special height walls, openings in walls for equipment or operations, and critical dimensions, etc. Drawings shall be drawn to a scale of not less than $1/4" = 1'-0"$ (1:50).
- B. Manufacturers' Data: Upon award of Contract, submit bound copies of Manufacturers' Illustrations and Technical Data to the Architect for review prior to procurement. Items of Standard Manufacture shall be submitted, including items purchased to be built into fabricated equipment. Each illustration shall be marked to describe accurately the item to be furnished as specified, including voltage, phase, load, accessories, etc.
- C. Manufacturers' List: Submit in writing a list of all manufacturers' representatives of the foodservice equipment, such as convection ovens, ranges, etc., and their authorized service agencies' addresses and telephone numbers.
- D. Foundation Data: Data and drawings shall be submitted for each item, if any, requiring special foundations, structures, or supports. Such foundations, structures, or supports will be provided and installed by other appropriate trades in accordance with the drawings and specifications which shall be provided by the Contractor and reviewed by the Architect.

- E. Operation and Maintenance Manuals: Provide three bound copies of operation, maintenance, and parts manuals for all equipment items of standard manufacture including standard component assemblies built into all custom-fabricated items.
- F. Review by the Architect of the drawings and brochures submitted by the Contractor does not waive the responsibility of the Contractor to furnish each item of equipment in complete compliance with the specifications and contract drawings.
- G. The number of copies of all submittals shall be as determined by the Architect.
- H. Samples: Samples of materials, products, and fabrication methods shall be submitted for review at no additional cost, before proceeding with the work.

1.3 QUALITY ASSURANCE

- A. Standard Products: Materials, products, and equipment furnished under this contract shall be the standard items of manufacturers regularly engaged in the production of such materials, products, and equipment and shall be of the manufacturers' latest design that complies with the specifications.
- B. Manufacturers' Qualifications: Manufacturers shall be regularly engaged in the production of the items furnished and shall have demonstrated the capability to furnish similar equipment that performs the functions specified or indicated herein.
- C. Installation Qualifications: Contractor shall use adequate numbers of skilled workmen 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 of the work defined in this Section.
- D. Coordination of Work: Coordinate work with the respective trades performing preparatory work for installation of equipment under this Contract, including, but not limited to: construction of pits, trenches, receptors; rough-in of supply, waste and vent piping; electrical connections; and field verification of dimensions.
- E. Product Options: Drawings indicate foodservice equipment based upon equipment specified herein. All substitutions shall be in compliance with the requirements in Division 1 (or Section I if appropriate.).
- F. Conflict: Where written specifications and drawings conflict or appear to conflict, request clarification. Prior to receiving clarification use the greater quality or greater quantity.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver foodservice equipment in containers designed to protect equipment and finish until final installation. Make arrangements to receive equipment at project site at a time and place agreed with the General Contractor. If the site is not ready for delivery, then either delay delivery or arrange to hold in a secure and protected warehouse until delivery can be made to job site.
- B. Store foodservice equipment in original containers and in location to provide adequate protection to equipment while not interfering with other construction operations. Coordinate with other trades so that worktables, serving counters and equipment are not used for scaffolding or as workbenches.
- C. Handle foodservice equipment carefully to avoid damage to components, enclosures, and finishes. Do not install damaged foodservice equipment; replace and return damaged components to equipment manufacturer.

1.5 APPLICABLE CODES AND STANDARDS

- A. Except as otherwise indicated, each item of equipment shall comply with the latest current edition of the following standards as applicable to the manufacture, fabrication, and installation of the work in this section. Comply with all Federal, State, and Municipal regulations and notifications which bear on the execution of this work. Call to the attention of the Owner in writing any design conflict with

the requirements of the Americans with Disabilities Act (ADA) during Bid Process so resolution can be effected prior to Contract Award.

1. NSF Standards: Comply with applicable National Sanitation Foundation standards and criteria and provide NSF "Seal of Approval" on each manufactured item and on major items of custom-fabricated work.
2. UL / ETL / CSA Standards: For electrical components and assemblies, provide either UL / ETL / CSA listed products or, where no listing service is available, provide a complete index of the components used as selected from the UL / ETL / CSA "Recognized Component Index." For fire extinguishing systems comply with UL 300.
3. ANSI Standards: Comply with applicable ANSI standards for electric-powered and gas-burning equipment; for piping to compressed-gas cylinders; and for plumbing fittings, including preparatory breakers and air gaps, to prevent siphonage in water piping.
4. AGA / CGA: All gas-fired equipment shall be AGA / CGA approved, equipped to operate on the type gas available at the job site, and shall contain 100% automatic safety shut-off devices.
5. NFPA Standards: Comply with NFPA Bulletin 96 for exhaust systems; with NFPA Bulletins 13, 17, 17A and 96 for fire extinguishing systems; and with NFPA 54, National Fuel Gas Code and NFPA 70, National Electrical Code.
6. ASME Code: Comply with ASME boiler code requirements for steam-generating and steam-heated equipment; provide ASME inspection, stamps, and certification of registration with National Board.
7. SMACNA Guidelines: Provide seismic restraints for food service equipment to comply with the Sheet Metal and Air Conditioning Contractors National Association's (SMACNA) "Kitchen Equipment Fabrication Guidelines", appendix 1, "Guidelines for Seismic Restraints of Kitchen Equipment", unless otherwise indicated.
8. ASHRAE: Provide mechanical refrigeration systems complying with the American Society of Heating, Refrigerating and Air Conditioning Engineers' ASHRAE 15, "Safety Code for Mechanical Refrigeration".

1.6 PROJECT CONDITIONS

- A. Visit the job site to field check actual wall dimensions and rough-in and be responsible for furnishing, fabricating, and installing the equipment in accordance with the available space and utility services as they exist on the job site for an accurate fit.
- B. Check all door openings, passageways, elevators, etc., to be sure that the equipment can be conveyed to its proper location within the building and, if necessary, check with the Contractor regarding the possibility of holding wall erection, placement of doorjambes, windows, etc., for the purpose of moving the equipment to its proper location. Any removal and rebuilding of walls, partitions, doorjambes, etc., necessary to place the equipment or, if caused by incorrect information on the Contractor's drawings, shall be done at the expense of the Contractor.
- C. Physically check the location and utility size of all "rough-ins" at the job site for compatibility with the equipment being installed before finished floors, walls, and/or ceilings are in place.
- D. Check electrical characteristics and water, steam, and gas pressure. Provide pressure-regulating valves where required for proper operation of equipment.

1.7 GUARANTIES AND WARRANTIES

- A. Self-contained or remote refrigeration systems furnished under this Contract shall be provided with start-up and a one-year service contract providing free service, 24 hours per day, seven days per week, including parts and labor. Hermetic or semi-hermetic compressors shall be covered by the manufacturers' factory warranty for an additional four years. Other equipment provided shall include a one-year warranty covering parts and labor, plus any extended warranties as normally provided by individual manufacturers. Equipment including refrigeration systems both self-contained and remote

shall be warranted by the Contractor on the project for one year as indicated in the preceding sentence. The first day of the first year commences upon the issuance of a certificate of occupancy for each area.

PART 2 – PRODUCTS

2.1 GENERAL

- A. The equipment and its component parts shall be new and unused. All items of standard manufactured equipment shall be current models at the time of delivery. Parts subject to wear, breakage, or distortion shall be accessible for adjustment, replacement, and repair.
- B. Means shall be provided to ensure adequate lubrication for moving parts. Oil holes, grease fittings, and filler caps shall be accessible without the use of tools.
- C. Plastic nameplates, to identify controls on fabricated equipment and when specified elsewhere, shall be provided of two-ply, 1/16" (2 mm), rigid plastic material which shall be specifically manufactured for engraving such nameplates. The finished nameplate shall be machine engraved with white letters on a black background and shall have edges beveled at a 45° angle. Nameplates shall be attached using an adhesive recommended by the manufacturer of the engraved material.
- D. The design of the equipment shall be such as to provide for safe and convenient operation. Covers or other safety devices shall be provided for all items of equipment presenting safety hazards. Such guards or safety devices shall not present substantial interference to the operation of the equipment. Guards shall provide easy access to guarded parts.
- E. Trim shall not be an acceptable substitute for accuracy and neatness. When trim is required and accepted by Architect in lieu of rejection of items of equipment, it shall be the Contractor's responsibility to provide same at no additional cost.
- F. Unless otherwise specified herein, no material lighter than #20 gauge shall be incorporated into the work. Gauges for sheet iron and sheet steel shall be U.S. Standard Gauges and finished equipment gauge thickness shall not vary more than 5% plus or minus from the thickness indicated below.

<u>GAUGE</u>	<u>THICKNESS</u>	<u>GAUGE</u>	<u>THICKNESS</u>
#10	0.1406" (3.0mm)	#16	0.0625" (1.6mm)
#12	0.1094" (2.5mm)	#18	0.0500" (1.25mm)
#14	0.0781" (2.0mm)	#20	0.0375" (1.0mm)

- G. Materials or work described in words which have a well-known and accepted technical or trade meaning shall be held to refer to such accepted meanings.

2.2 MATERIALS

- A. Submit a certified copy of the mill analysis of materials if requested by the Architect.
- B. Stainless steel sheets shall conform to American Society for Testing and Materials (ASTM), specification A240, Type 304 Condition A, 18-8, having a No. 4 finish. A No. 2B finish shall be acceptable on surfaces of equipment not exposed to view. Sheets shall be uniform throughout in color, finish, and appearance.
- C. Stainless steel tubing and pipe shall be Type 304, 18-8, having a No. 4 finish, and shall conform to either ASTM A213 if seamless or ASTM A249 if welded.
- D. Rolled shapes shall be of the cold-rolled type conforming to ASTM A36.
- E. Galvanized sheet steel shall conform to ASTM A526; where extensive forming to take place, conform to ASTM A527; conform to ASTM A525, coating designation G115, chemical treatment.

- F. Galvanized steel sheets shall be cold-rolled, stretcher leveled, bonderized, and rerolled to ensure a smooth surface.
- G. Castings shall be corrosion-resisting metal containing not less than 30% nickel. Castings shall be rough ground, polished, and buffed to bright luster and free from pit marks, runs, checks, burrs, and other imperfections. In lieu of corrosion-resisting metal castings, die-stamped or cast 18-8 stainless steel will be acceptable.
- H. Millwork materials shall be free from defects impairing strength, durability, or appearance; straight and free from warpage; and of the best grade for their particular function. Wood shall be well seasoned and kiln dried and shall have an average moisture content of 8%, a maximum of 10%, and a minimum of 5%.
1. Plywood and other woodwork of treatable species, where so required by the code, shall be fire-retardant treated to result in a flame spread rating of 25 or less with no evidence of significant progressive combustion when tested for 30 minutes duration under ASTM E84 and shall bear the testing laboratory mark on a surface to be concealed.
 2. Concealed softwood or hardwood lumber shall be of poplar, douglas fir, basswood, red oak, birch, maple, beech, or other stable wood and shall be select or better grade, unselected for color and grain, surfaced four sides, square-edged, and straight. Basswood may be used where fire-retardant treated materials are required.
 3. Plywood for transparent finish shall conform to U.S. Product Standard PS-51-71, Type I (fully waterproofed bond), with architectural grade face veneers of species as specified, free of all pin knots, patches, color streaks and spots, sapwood, and other defects. Plywood designated to have plywood cores shall be of either 5 ply or 7 ply construction. Plywood so designated on the drawings and plywood, not otherwise shown, shall have a particleboard core, cross banding of veneers, and face and back veneers. Particleboard cores shall have a 45-pound density, except where the fire retardant treatment requires cores of lesser density.
 4. Face veneers shall be matched for color and grain to produce balance and continuity of character. Mineral streaks and other discolorations, wormholes, ruptured grain, loose texture, doze, or shake will not be permitted. Face veneer leaves on each surface shall be full-length, book matched, center matched, and sequence matched. Surfaces shall be sequenced and blueprint matched. Veneers, not otherwise indicated, shall be plain sliced. Backing veneers for concealed surfaces shall be of a species and thickness to balance the pull of the face veneers.
 5. Hardwood plywood for painted surfaces shall conform to U.S. Product Standard PS-51-71, Type I, and shall have sound birch, maple, or other approved close grain hardwood faces suitable for a paint finish.
 6. Perforated hardboard shall be a tempered hardboard, 1/4" (6 mm) thick, conforming to Federal Specification LLL-B-810B, Type I, SIS, Finish B (primed), Design B (perforated), with 1/4" (6 mm) diameter holes spaced on 1" (25 mm) centers both ways.
 7. Plastic laminate surfaces shall be laminated with thermosetting decorative sheets of the color, pattern, and style as selected by the Architect. Horizontal surfaces shall be laminated with sheets conforming to Federal Specification L-P-508F, Style D, Type I (general purpose), Grade HP, Class 1, 1/16" (2 mm) thick, satin finish, with rough sanded backs. Vertical surfaces shall be laminated with sheets conforming to Federal Specification L-P-598F, Style D, Type II, (vertical surface), Grade HP, Class 1, non-forming, satin finish, 1/32" (1 mm) thick or heavier. Surfacing for curved surfaces shall be laminated from sheets conforming to Federal Specification L-P-508F, Style D, Type III (post-forming), Grade HP, Class 1, satin finish. Balance sheets for backs in concealed locations shall be either reject material of the same type and thickness as the general purpose grade facing or may be .020" (0.5 mm) thick laminate backing sheets conforming to Federal Specification L-P-00508E, Style ND, Type V (backing sheet), Grade HP.
 8. Adhesive for application of plastic laminate to wood substrates of counter tops shall be a phenolic, resorcinol, or melamine adhesive conforming to Federal Specification MMM-A-181C and producing a waterproof bond. Adhesive for applying plastic laminate to

vertical surfaces shall be either a waterproof type or a water resistant type such as a modified urea- formaldehyde resin liquid glue conforming to Federal Specification MMM-A-188C. Contact adhesive will not be acceptable.

9. Plywood for laminate assemblies shown or specified with plywood core shall be of the 5 or 7 ply construction with sanded close-grain hardwood face and back veneers, laminated with waterproof glue, in thickness shown, conforming to U.S. Product Standard PS-51-71. Particle board for plastic laminate assemblies shown or specified with particle board wood core shall conform to U.S. Products Standard CS-236-66, Type 1 or 2, Grade B (45 pound density), Class 2; except where fire-retardant treatment is required, the density shall conform to the treatment requirements.
- I. Sealant: ASTM C 920; type S, Grade NS, Class 25, use, NT. Provide elastomeric sealant, NSF certified for end use application indicated. Provide sealant that, when cured and washed, meets requirements of Food and Drug Administration's 21 CFR, Section 177.2600 for use in areas that come in contact with food. Dow-Corning #780 or General Electric "Silastic" or approved equal in either clear or approved color to match surrounding surfaces and applied in accordance with sealant manufacturers' recommendations for smooth, sealed finish.
- J. Tempered Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated surfaces), Type I (transparent), Class 1 (clear), Quality q3 (glazing select). Provide products complying with ANSI Z97.1, manufactured by horizontal (roller hearth) process and 1/4" (6 mm) thick, unless otherwise indicated. Provide exposed safety edges, if any, seamed before tempering.
- K. Sound Dampening: NSF-certified, nonabsorbent, hard-drying, sound deadening coating. Provide coating compounded for permanent adhesion to metal in 1/8" (3 mm) thickness that does not chip, flake, or blister.

2.3 FINISHES

- A. Paint and coatings shall be of an NSF approved type suitable for use in conjunction with foodservice equipment. Such paint or coating shall be durable, non-toxic, non-dusting, non-flaking, and mildew resistant; shall comply with all governing regulations; and shall be applied in accordance with the recommendations of the manufacturer.
- B. Exterior, galvanized parts, exposed members of framework, and wrought steel pipe where specified to be painted shall be cleaned, properly primed with rust-inhibiting primer, degreased, and finished with two (2) coats of epoxy-based grey hammer tone paint, unless otherwise specified.
- C. Stainless steel, where exposed, shall be polished to a #4 commercial finish. Where unexposed, finish shall be #2B. The grain of polishing shall run in the same direction wherever possible. Where surfaces are disturbed by the fabricating process, such surfaces shall be finished to match adjacent undisturbed surfaces.
- D. Galvanized shelving shall not be painted.
- E. Fabricated equipment shall be spray coated with plastic suitable for protecting the equipment during transport and installation. The coating shall be easily removable and shall be removed after the equipment installation is complete at the work site or, alternatively, when directed by the Architect.
- F. Exposed surfaces on brass, bronze, or steel shall be plated with chromium over nickel in accordance with Federal Specifications WW-P-541, Paragraph 9.5 and Table 9.4, unless otherwise specified.

2.4 ELECTRICAL AND MECHANICAL REQUIREMENTS

- A. Standard UL / ETL / CSA listed materials, devices, and components shall be selected and installed in accordance with NEMA Standards and recommendations and as required for safe and efficient use and operation of the foodservice equipment without objectionable noise, vibration, and sanitation problems.

1. Provide recognized commercial grade signals, "on-off" pushbuttons or switches, and other speed and temperature controls as required for operation of each item, complete with pilot lights and permanent engraved, plastic laminate signs and graphics identifying each item. Provide stainless steel cover plates at controls and signals.
2. Each item requiring electrical power shall be equipped with either a terminal box for permanent connection or with cord and plug for interruptible connection, as indicated. Provide NEMA standard grounding type plugs, where used.
3. Furnish foodservice equipment completely wired internally using wire and conduit suitable for a wet location, including a separate grounding wire. Provide electrical outlets and receptacles required to be mounted on or in fabricated equipment and interconnect to a suitable terminal box (sub-panel, starter, or disconnect switch if so specified) with all wires neatly tagged showing item number, voltage characteristics, and load information.
4. Receptacles for all wall- and floor-mounted outlets will be provided to be used for plug-in equipment with characteristics as noted on the drawings. Provide Hubbell three-wire or four-wire grounding-type connectors and neoprene cords installed on each item of plug-in equipment to match receptacles provided.
5. Electrically heated equipment shall be internally wired to a thermostatic control and an "on-off" red neon light indicator, which shall be mounted in a terminal box on a removable stainless steel access panel.
6. Only rigid steel zinc-coated conduit shall be used, painted to match adjacent surfaces where exposed. Wiring shall be run concealed wherever possible.
7. Provide on, or for, each motor-driven appliance, electrical heating or control unit, a suitable control switch or starter of the proper type and rating.
8. Appliances shall be furnished complete with motors, driving mechanism, starters, and controllers, including but not limited to, master switches, timers, cut-outs, reversing mechanism, and other electrical equipment if and as applicable. Wiring and connection diagrams shall be furnished with electrically operated machines and for electrically wired fabricated equipment.
9. Appliances shall be of rigid construction, free from objectionable vibration. Quietness of operation of all foodservice equipment is a requirement. Remove or repair any equipment producing objectionable noise and/or vibration as directed by the Architect.
10. Motors shall be of the drip-proof, splash-proof, or totally enclosed type, having a continuous duty cycle and ball bearings, except small timing motors which may have sleeve bearings. Motors shall have windings impregnated to resist moisture. Motors located where subject to deposits of dust, lint, or other similar matter from the machine on which installed shall be of the totally enclosed type. Motors shall have ample power to operate the machines for which designated under full load operating conditions without exceeding their nameplate ratings. Horsepower requirements on equipment shall be determined by the manufacturer, based on normal operation at maximum capacity. The nominal rated motor horsepower shall be not less than the horsepower required for normal operation of the equipment at maximum capacity. Insulation shall be NEMA Class B, or better.
11. Cover plates shall be furnished and installed for all electrical outlets, receptacles, switches, etc., to match the material and finish of the equipment to which they will be fastened.
12. Switches, controls, etc., shall be conspicuously labeled as to use with plastic nameplates secured to the adjacent surface as previously specified in Article 2.01-C. Submit a sample for approval if requested by Architect.
13. Where specified for custom fabricated equipment, provide compartment with electrical sub-panel which shall be pre-wired in conduit concealed in cabinet body construction and connected to all electrical components built into or set upon the counter. Electrical sub-panel shall be UL / ETL / CSA listed, 3-phase, 4-wire circuit breaker type with a ground buss main breaker and individual breakers for each serviced load. Buss shall be copper and the circuit breakers shall be the molded case, bolt-on type with thermomagnetic quick-make, quick-break trip. Multi-pole circuit breakers shall have an internal trip bar. The circuit breakers shall have an interrupting capacity of 10,000 amperes at 120 volts and there shall be a separate breaker

for each connected load. Each breaker shall be sized for 125% of the connected load and a minimum of two (2) extra, single pole, 20 amp circuit breakers shall be provided. The loads shall be connected through the breakers in a phased sequence to balance the load on each phase.

B. Water inlets shall be located above the positive water level wherever possible to prevent siphoning of liquids into the water supply system. Wherever conditions shall require a submerged inlet, a suitable type of check valve (except in jurisdictions where check valves are prohibited) and vacuum breaker shall be provided with the fixture to prevent siphoning. Where exposed, piping and fittings shall be chrome-plated. Where vacuum breaker piping is through equipment, provide chrome -plated escutcheon plates to cover holes.

1. Provide and install indirect waste lines from equipment which will discharge into floor drains or safe wastes, chrome-plated where exposed. Extend to a point at least 1" (25 mm) (or as required by local or state code) above the rim of the floor drain, cut bottom on 45-degree angle and secure in position.
2. Horizontal piping lines shall be run at the highest possible elevation and not less than 6" (150 mm) above the floor, through equipment where possible.
3. No exposed piping in or around fixtures or in other conspicuous places shall show tool marks or more than one thread at the fitting.
4. Steam operating valves on or in fabricated and purchased foodservice equipment shall be provided with composition hand wheels, which shall remain reasonably cool in service.
5. Provide suitable gas and liquid pressure-reducing valves for equipment with such components that might reasonably be expected to be affected over a period of time by adverse pressure conditions, including but not limited to dishwashers, booster heaters, coffee urns, ranges, steam boilers, etc.

C. Provide and install complete refrigeration systems--charged, started, and operating properly--including, but not limited to:

1. Compressors, condensers, racks, coils, vibration eliminators, sight glasses (moisture indicating type), expansion valves, filters, oil separators, thermostats, defrost time clocks, all controls and control wiring, liquid line driers, piping, and refrigeration grade copper tubing with all sweat joints using Safety-Silv No. 1200 or approved equal silver solder (with as few joints as possible)
2. Where specifications call for pre-piped lines (i.e., from a fixture to a valve compartment, etc.), provide such work in strict conformance with other sections of the specifications which set forth standards for this type of work or in conformity with the requirements of the ASHRAE Standards or local authorities, whichever is the greater.
3. Mechanically refrigerated cold pans shall have a normally closed liquid line electric solenoid valve installed before the expansion valve and wired to a silent-type toggle switch complete with an "on-off" red neon light indicator and both mounted in a terminal box on a removable access panel. This switch shall be fed by a separate control circuit and shall not to be wired into the compressor circuit so that it shall stop the flow of refrigerant to the cold pan and not turn off the compressor. The compressor shall then pump down and turn off through the action of the pressure control.
4. Each refrigeration item specification is written to provide minimum specifications and scope of work. Refrigeration equipment shall be designed and installed to maintain the following general temperatures unless otherwise specified.
5.

a. Refrigerators	1.7°C / 35°F
b. Freezers	-23.3°C / -10°F
c. Cold Pan	-17.8°C / 0°F
d. Work Rooms	10°C / 50°F

6. Provide electrical and refrigeration components needed by the completed system and complete all refrigeration and control connections of and to said components
7. Provide evaporator coil defrost system on all walk-in refrigerators and freezer rooms where the refrigeration systems are designed to operate at room temperature of less than 35°F (1.7°C).
8. Verify the requirements of and provide any or all additional refrigeration specialty(s) or component(s) required or recommended by the manufacturer for proper operation under the specific operating conditions and location of each system specified.
9. Verify and provide manufacturer's certification (or certification by manufacturer's authorized agent) that the equipment selection hereinafter specified for each refrigeration system is properly sized and shall meet the operating requirements set forth for each system regarding maintaining specified operating temperature, hours of compressor running time. System pressures and velocities as recommended by the equipment manufacturer(s).
10. During check-out and initial operation, verify that:
 - a. Controls are properly adjusted.
 - b. Condensers are equipped with an overload protector.
 - c. Competent service mechanic is on site during the first eight (8) hours of operation.
 - d. Switches, starters, and controls are identified as to function.
11. Unless otherwise specified, furnish thermometers for walk-in units mounted above the exterior entrance door with suitable length armored capillary tubes to allow the sensing bulbs to be installed in the incoming air stream to the blower coil with runs fastened to the walk-in walls to prevent it from damage. This identical requirement applies to alarm systems when specified.

2.5 PRODUCT SPECIFICATIONS

- A. Refer to Part 4 for complete itemized product specifications.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Begin installing the equipment at the time the building is ready to receive the equipment and in accordance with the schedule.
- B. Provide a competent foreman or supervisor for erection of equipment and to coordinate with other trades regarding connections, installation, and inspection. Coordinate delivery schedule to ensure adequate openings in the building to receive the equipment.
- C. Install refrigeration work in an approved manner, using first quality fittings, controls, valves, etc. Refrigeration items shall be started up, tested, adjusted, and turned over to the Architect in first-class condition and left operating in accordance with the manufacturer's specifications.
- D. Set equipment that rests on masonry bases, level onto a bed of silicone rubber sealant.
- E. Seal equipment that butts to a wall or against other equipment with silicone rubber sealant. Set trim strips or other items requiring fasteners in a bed of silicone rubber sealant and fastened with suitable stainless steel fasteners 48" (1200mm) or less on centers. Thoroughly clean and degrease all surfaces prior to the application of sealant.
- F. Install and interconnect electrical controls, switches, or other units which are separately furnished for field installation in or on equipment provided, unless otherwise specified.
- G. Install and wire refrigeration systems in strict conformance with the manufacturers' instructions and recommendations. Ensure that all refrigeration condensing units are ventilated properly and are accessible for repair, maintenance, and inspection.

- H. Hang evaporator coils per the manufacturer's recommendation at the locations as shown on the drawings. Mount units such that the drain pans are pitched to the drain lines. Hang the coils using nylon or other approved non-conductive, non-corrosive fasteners. Furnish #12 gauge galvanized steel fishplates of suitable size and shape on the exterior ceiling of the walk-in to spread the weight of the coils adequately. Connect coils to the condensing unit and install to constitute a complete working system capable of maintaining the interior temperatures specified regardless of the heavy usage the walk-in units may receive.
- I. Furnish and install a copper or PVC drain line painted silver from each coil outlet to a point 1" (25mm) above the floor drain. Trap drain lines immediately above the floor drain. Provide continuous electrified heater tape for freezer drain lines, coordinate electrical requirements and wiring with electrical division. Insulate drain line after installation.
- J. Refrigeration tubing shall be the Type L, ACR hard drawn degreased, sealed copper and shall be installed with horizontal runs sloped 1" per 20 feet (1:240) toward the condensing units. Refrigerant piping shall be properly supported by adjustable hangers spaced and adjusted to the drop required. Where vertical runs of more than 5' (1500mm) occur in the suction line, trap the risers at the bottom. Install piping so that refrigerant or oil cannot drain back into the coils from the suction line.
- K. Insulate suction and refrigerant lines with minimum 1/2" (13mm) Armstrong armafex or equal cellular type insulation. Provide metal pipe sleeves where piping passes through a wall, ceiling, or floor. Fill space around the tubing with mastic insulating compound. Install a permanent suction line filter in each compressor suction line with pressure fitting ahead of the filter to facilitate checking of pressure drop through the filter. Fully insulate and seal penetrations through walk-in cooler or freezer structures to be vapor tight to prevent condensation within any light fixtures, switch boxes, junction boxes, or any other fittings. Fully seal refrigeration and drain lines and provide escutcheon plates.
- L. Furnish and completely install a thermostat to control the refrigeration temperatures for each individual compartment.
- M. Mount the condensing units on a welded steel rack containing all accessories and components necessary to form a complete condensing unit package. Provide each condensing unit with a factory mounted, pre-wired control panel/disconnect switch complete with circuit breakers, contactors, and time clocks as required.
- N. Furnish the refrigeration systems with a one-year refrigeration service contract, covering all parts and labor, with service available seven days per week, 24-hours per day. Provide an option for continuation of the service contract after the first year. Warrant the refrigeration system for one year and provide the compressors with the manufacturer's extended five-year warranty.
- O. Furnish four (4) copies of complete remote refrigeration system control wiring and piping diagrams. Frame one (1) copy in Plexiglas and mount at compressor location or inside the refrigeration system enclosure as appropriate.
- P. Coordinate the equipment work with the respective work of other Sections so that electrical and mechanical components built into the equipment will conform and/or adapt to the type, materials, and characteristics of the building components.
- Q. Install heated and motor-driven equipment so as to operate efficiently. Provide additional vents, guards, deflectors, and other accessories as needed at no additional cost. Note such additions or modifications on the shop drawings and bring to Architect's attention by special accompanying letter.

3.2 FABRICATION

- A. Items of fabricated equipment shall be fabricated in the same factory and shall be similar in construction details, materials, methods, and appearance to similar types of items so fabricated under this contract.
- B. Each fabricated item of equipment shall include necessary reinforcing, bracing, and welding with the proper number and spacing of uprights and cross members for strength. Wherever standard sheet

sizes will permit, the tops of all tables, shelves, exterior panels of cabinet type fixtures, and doors and drain boards shall be constructed of a single sheet of metal. Except where required to be removable, flat surfaces shall be secured to vertical and horizontal bracing members by welding or other approved means to eliminate buckle, warp, rattle, and wobble. Equipment not braced in a rigid manner and which is subject to rattle and wobble shall be unacceptable, and the Contractor shall add additional bracing in an approved manner to achieve acceptance.

- C. Suitable pipe slots shall be provided on fabricated equipment to accommodate service and utility lines and mechanical connections. These slots shall be of proper size and shall be neatly made with turned up edges around to eliminate cutting or defacing of equipment on the job. Cabinet bases shall be provided with an inner panel duct at the ends or rear of the cabinet allowing adequate space to conceal vertical piping. Such work, when performed at the job site, shall be of the same quality as similar work performed in the shop.
- D. Exposed surfaces shall be free from bolt and screw heads. When bolts are required, they shall be of the concealed type and be of similar composition as the metal to which they are applied. Where bolt or screw threads on the interior of fixtures are visible or may come into contact with hands or wiping cloths, they shall be capped with a stainless steel acorn nut and stainless steel lock washer.
- E. Where screw threads are not visible or readily accessible, they shall be assembled with stainless steel lock washers and nuts. Wherever bolts or screws are welded to the underside of trim or tops, the reverse side of the weld shall be finished uniformly with the adjoining surfaces. Depressions at these points shall not be acceptable.
- F. Rivets shall not be permitted in any location.
- G. Welding shall be the heliarc method with welding rod of the same composition as the sheets or parts welded. Welds shall be complete, strong, and ductile with excess metal ground off and joints finished smooth to match adjoining surfaces. Welds shall be free of mechanical imperfections such as gas holes, pits, cracks, etc., and shall be continuously welded so that the fixtures shall appear as one piece construction. Butt welds made by spot solder and finished by grinding shall not be acceptable.
 - 1. Spot welds shall have a maximum spacing of 3" (75mm). Tack welds shall be of at least 1/4" (6mm) length of welding material at a maximum space of 4" (100mm) from center to center. Weld spacing at the ends of the channel battens shall not exceed 2" (50mm) centers.
 - 2. In no case shall soldering be accepted.
 - 3. Fixtures shall be shop fabricated of one piece and shipped to the job completely assembled wherever possible. Equipment too large to transport or enter the building as one piece shall be constructed so that the field joints can be welded at the job site.
 - 4. Exposed joints shall be ground flush with adjoining material and finished to harmonize therewith. Whenever material has been depressed by a welding operation, such depression shall be suitably hammered and peened flush with the adjoining surface and, if necessary, again ground to eliminate low spots. In all cases, the grain of rough grinding shall be removed by successive fine polishing operations.
 - 5. Unexposed welded joints on under shelves of tables or counters in stainless steel construction shall be suitably coated at the factory with an approved metallic-based paint.
 - 6. After galvanized steel members have been welded, welds and areas where galvanizing has been damaged shall have a zinc dust coating applied in conformance with U.S. Government Military Specification Number MIL-P-26915.
- H. Butt joints and contact joints, wherever they occur, shall be close fitting and shall not require a filler. Wherever break bends occur, they shall be free of undue extrudence and shall not be flaky, scaly, or cracked in appearance; where such breaks do mar the uniform surface appearance of the material, such marks shall be removed by suitable grinding, polishing, and finishing. Wherever sheared edges occur, they shall be free of burrs, fins, and irregular projections and be finished to obviate danger of cutting or laceration when the hand is drawn over them. In no case shall overlapping materials be acceptable where miters or bull nosed corners occur.

- I. The grain of polishing shall run in the same direction on horizontal and on vertical surfaces of each item of fabricated equipment except in the case where the finish of the horizontal sections of each shall terminate in a mitered edge. Where sinks and adjacent drain boards are equipped with backsplash, the grain of polishing shall be consistent in direction throughout the length of the backsplash and sink compartment.
- J. Component parts, whether fabricated by the Contractor or purchased for building into the fabricated equipment, shall conform to the following.
- K. Bolts, screws, nuts, and washers shall be of steel, except where brass or stainless steel is fastened, in which case they shall be of brass or stainless steel, respectively. Where dissimilar metals are fastened, bolts, screws, nuts, and washers shall be of the higher grade metal. The spacing and extent of bolts and screws shall be such as to ensure suitable fastening and prevent buckling of the metals fastened.

3.3 CLEAN-UP

- A. At completion of the installation, clean up, lubricate, and adjust where necessary items of equipment provided and turn them over in first-class condition.
 - 1. Where stainless steel surfaces are disturbed by the installation or fabricating process, such surface shall be finished to match adjoining undisturbed surfaces.
 - 2. At the completion of the installation work, stainless steel shall be gone over with a portable polishing machine and buffed to perfect surfaces. Painted surfaces shall be carefully gone over and retouched as required.

3.4 START-UP TESTING AND COMMISSIONING

- A. Startup Services: Engage factory-authorized service representatives to perform startup services and to demonstrate and train Owner's maintenance personnel as specified below.
 - 1. Coordinate food service equipment startup with service-utility testing, balancing, and adjustments. Do not operate steam lines before they have been cleaned and sanitized.
 - 2. Remove protective coverings, clean and sanitize equipment, both inside and out, and re-lamp equipment with integral lighting. Where applicable, comply with manufacturer's written cleaning instructions.
 - 3. Test each equipment item for proper operation. Repair or replace equipment that is defective in operation, including units that operate below required capacity or that operate with excessive noise or vibration.
 - 4. Test refrigeration equipment's ability to maintain specified operating temperature under heavy-use conditions. Repair or replace equipment that does not maintain specified operating temperature.
 - 5. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - 6. Test motors and rotating equipment for proper rotation and lubricate moving parts according to manufacturer's written instructions.
 - 7. Test water, drain, gas, steam, oil, refrigerant, and liquid-carrying components for leaks. Repair or replace leaking components.
 - 8. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance for each food service equipment item.
 - 9. Review data in the operation and maintenance manuals. Refer to Division 1 Section "Contract Closeout."
 - 10. Review data in the operation and maintenance manuals. Refer to Division 1 Section "Operation and Maintenance Data."

11. Schedule training with Owner, through Architect, with at least 7 days' advance notice.

3.5 SEISMIC RESTRAINTS

- A. Install equipment in these contract documents according to the "SMACNA Guidelines for Seismic Restraint of Kitchen Equipment" in any State, province, or jurisdiction that has legislated this requirement as necessary for acceptance. This shall include:
1. Identifying these items on his submittal drawings, Plans, Elevations, and Sections.
 2. Showing required SMACNA methods of restraint on his submittal drawings.
 3. Referencing the appropriate detail(s).
 4. Obtain regulatory approval for all seismic engineering details.
- B. If no SMACNA detail exists for a particular situation, prepare and obtain approval for a special attachment detail:
1. Detail must be prepared by an engineer licensed by the State having jurisdiction over the project and accompanied by the supporting calculations used in the design.
 2. Verify that the restraint design is appropriate to the building's structural conditions and the surfaces to which the equipment will be secured.

PART 4 - ITEMIZED PRODUCT SPECIFICATIONS

- A. Manufacturer and Model Numbers specified are for clarity and description only and are a standard of comparison. Any substitutions submitted by the Contractor must meet the form, fit, function and life cycle criteria of the items specified. Owner and Architect will be the sole determinants of what is an "approved equal". All items listed on the contract drawings under the heading "Foodservice Equipment Schedule" shall be furnished in strict accordance with the foregoing specifications and with the following detailed item specifications:

Item No. 1.01 Hand Sink	Eagle Group HSA-10-1X*C106
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Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl, 304 stainless steel construction, requires splash mounted faucet, deep-drawn seamless design-positive drain, inverted "V" edge

- 303987-X - Gooseneck Faucet, standard, splash mount, 4" O.C.

Verify With Owner the requirement for the Soap and Paper Towel Dispenser.

- 318496-X- Paper Towel Dispenser, wall mounted, folded towel dispenser, 304 stainless steel construction
- 300602-X - Soap Dispenser, conventional, 12 ounce

Item No. 1.02 Ice Maker w/ Bin	NIKEC / Existing*C106
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NIKEC / EXISTING/Relocated

- Verify if Broward County will be responsible for the installation of the Ice Maker
- Verify Electric
- This item is existing; KEC to coordinate its relocation

Item No. 1.03 Hot Food Serving Counter	Delfield SH-5-NU*C106
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Shelleysteel™ Hot Food Serving Counter, Electric, 5-pan capacity, 14-gauge stainless steel top, 18-gauge stainless steel exterior, 14-gauge galvanized bottom, enclosed base with no under storage, 5" swivel casters

- 36" standard height
- P-5 - Open understorage with shelf (KH-NU and SH-NU only)
- SG24-C - Tray Slides, 10" extended three bar tubular fold down style
- G-74 - Glass front counter protector
- Four (4) casters; two (2) with brakes

Item No. 1.04 Cold Pan Serving Counter**Delfield DC-L5*C106**

Concepts™ Liquitec® Serving Counter, 80" length, five (5) 12" x 20" pan capacity, stainless steel top, front and rear removable panels, thermostat for temperature control, flushed mounted pans, 0.5" stainless steel drain, 6" legs, 948 BTU

- DCTS-SV - Concepts™ "V" Tray Slide, stainless steel
- DCSE - Concepts™ Base Finish End Panel, stainless steel finish

Item No. 1.05 Work Table**Eagle Group T3672SE*C106**

Spec-Master® Work Table, 72" Wide x 36" Deep, 14/304 stainless steel top with rolled edges front and back, square turndown ends, Uni-Lok® gusset system, 18 gauge stainless steel undershelf, four (4) 1-5/8" diameter heavy gauge stainless steel legs with 1" adjustable stainless steel feet, NSF

Custom Fabricated is acceptable, must follow CLI Standard Details.

Item No. 1.06 Work Table**Eagle Group T2436SE*C106**

Spec-Master® Work Table, 36" Wide x 24" Deep, 14/304 stainless steel top with rolled edges front and back, square turndown ends, Uni-Lok® gusset system, 18 gauge stainless steel undershelf, four (4) 1-5/8" diameter heavy gauge stainless steel legs with 1" adjustable stainless steel feet, NSF

Custom Fabricated is acceptable, must follow CLI Standard Details.

Item No. 1.07 Reach-in Refrigerator**True STG1R-2HS-HC*C106**

SPEC SERIES® Refrigerator, Reach-in, one-section, stainless steel front, aluminum sides, two (2) stainless steel half doors with locks, cam-lift hinges, digital temperature control, aluminum interior, three (3) gray shelves, LED interior lights, 5" casters, R290 Hydrocarbon refrigerant, MADE IN USA

- Door hinged right standard
- Three (3) vinyl shelves and shelf supports standard per section
- #1 type tray slide for one (1) 18"x26" or two (2) 14"x18" pans, set of two
- 5" casters, set of 4, standard; two (2) with brakes

Item No. 1.08 Reach-In Heated Cabinet**True STG1H-2HS*C106**

SPEC SERIES® Reach-in Heated Cabinet, one-section, stainless steel front, aluminum sides, two (2) stainless steel half doors with locks, cam-lift hinges, digital temperature control, aluminum interior, three (3) chrome shelves, MADE IN USA

- Left door hinging
- Three (3) chrome shelves and shelf supports standard per section
- #1 type tray slide for one (1) 18"x26" or two (2) 14"x18" pans, set of two
- 5" casters, set of four, standard; two (2) with brakes

Item No. 1.09 Work Table**Eagle Group T3672SE*C106**

Spec-Master® Work Table, 72" Wide x 36" Deep, 14/304 stainless steel top with rolled edges front and back, square turndown ends, Uni-Lok® gusset system, 18 gauge stainless steel undershelf, four (4) 1-5/8" diameter heavy gauge stainless steel legs with 1" adjustable stainless steel feet, NSF

Custom Fabricated is acceptable, must follow CLI Standard Details.

Item No. 2.01 Convection Oven**Southbend SLGS/22SC*C106**

SilverStar Convection Oven, gas, double-deck, standard depth, solid state controls, stainless steel front, top and sides, aluminized steel rear, 60/40 dependent doors, interior light, 6" stainless steel legs, 144,000 BTU

- LP Gas
- Standard power system
- Stainless steel solid doors
- 3/4" quick disconnect with 4 foot hose, each with restraining device

- Provide Restraining devices as required by Code

Item No. 2.02	Boilerless Convection Steamer	Cleveland 22CGT6.1*C106
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SteamChef™ 6 Convection Steamer, Gas, boilerless, countertop, one (1) compartment, six (6) full size pan capacity, electromechanical controls, automatic drain and water level controls, KleanShield™ interior, standard treated and tap water connection, stainless steel exterior, 4" adjustable legs with flanged feet, 32,000 BTU, UL, NSF, ENERGY STAR®

- LP gas
- QDC60 - Gas Quick Disconnect, 60" long
- ES26304466G - Equipment Stand, 44" High, includes common drain and water connection manifold, gas flue exhaust kit, for mounting two (2) stacked 22CGT6'S OR one (1) 22CGT3 ON TOP OF one (1) 22CGT6, stainless steel
- Interconnected with Water Filter Item # 2.02A
- Provide Restraining devices as required by Code

Item No. 2.02A	Water Filter Assembly	Cleveland 9797-50CT*C106
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CT KLEENSTEAM® Filter System, for counter top steamers, one (1) 4CB5 5 micron carbon block (9617-11), one (1) SS10 Scalestick cartridge (9799-0201) and two (2) ScaleKleen 7.0 ounce. packets (9796-20)one (1) (note: two are needed for double stack applications)

- Mount at 72" above finished floor
- Interconnected with Item # 2.02

Item No. 2.03	Equipment Stand	Cleveland ES263044E*C106
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Equipment Stand, 44" High, includes common drain and water connection manifold, for mounting two (2) stacked 22CET6'S OR one (1) 22CET3.1 ON TOP OF one (1) 22CET6.1, stainless steel

Custom Fabricated is acceptable, must follow CLI Standard Details.

Item No. 2.04	Tilting Skillet, Gas	Southbend BGLT-40*C106
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Tilting Skillet, gas, 40 gallon capacity, manual tilt, electronic ignition, crank tilt with self-locking positive stop, removable lip strainer, stainless steel construction, open leg frame base, adjustable feet front, adjustable flanged feet rear, 100,000 BTU

- LP Gas
- DF-60 - Double pantry kettle filler with mounting bracket
- 3/4" quick disconnect with 4' hose
- Provide Restraining devices as required by Code

Item No. 2.04A	Floor Trough	Eagle Group FT-2430-SG*C106
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Floor Trough, 24" x 30", subway-style stainless steel grating, 4"Deep 14/304 stainless steel all-welded drain pan with built-in pitch, accommodates up to a 4"Diameter pipe, includes stainless steel removable perforated basket

KEC to coordinate proper location of floor trough to ensure that it receives the full pour path of items it is servicing

KEC to provide shop drawings for review and approval prior to fabrication

Custom Fabricated is acceptable, must follow CLI Standard Details.

Item No. 2.05	Range, 72", 6 Burners, 36" Griddle	Southbend 4721DD-3GL*C106
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Ultimate Restaurant Range, gas, 72", six (6) non-clog burners, one (1) 36" griddle left, standing pilot, two (2) standard ovens with battery spark ignition, includes one (1) rack per oven, 22-1/2" flue riser with shelf, stainless steel front, sides and shelf, 6" adjustable legs, 352,000 BTU-

- NOTE: 22.5" high flue riser, with heavy duty shelf, standard
- LP Gas
- 3/4" quick disconnect with 4' hose

- 1176867 - Restraining device kit
- Provide Restraining devices as required by Code

Item No. 2.06 Fryer, Gas, Heavy Duty Sectional Range Match Southbend P16-PF45*C106

Platinum Fryer Heavy Duty Range Match, gas, floor model, 45 lb. capacity, thermostatic controls, includes two (2) baskets, stainless steel fry pot and exterior, front legs and rear fixed casters, 110,000 BTU

- LP gas
- Provide quick disconnect with 4' hose
- PR24-16 - Platinum Backguard/Flue Riser, 24" H x 16" WIDE, without shelves, stainless steel front and sides
- Provide Restraining devices as required by Code

Item No. 2.07 Work Table Eagle Group T3696SE*C106

Spec-Master® Work Table, 96" Wide x 36" Deep, 14/304 stainless steel top with rolled edges front and back, square turndown ends, Uni-Lok® gusset system, 18 gauge stainless steel undershelf, six (6) 1-5/8" diameter heavy gauge stainless steel legs with 1" adjustable stainless steel feet, NSF

Custom Fabricated is acceptable, must follow CLI Standard Details.

Item No. 2.07A Work Table Eagle Group T3672SE*C106

Spec-Master® Work Table, 72" Wide x 36" Deep, 14/304 stainless steel top with rolled edges front and back, square turndown ends, Uni-Lok® gusset system, 18 gauge stainless steel undershelf, four (4) 1-5/8" diameter heavy gauge stainless steel legs with 1" adjustable stainless steel feet, NSF

Custom Fabricated is acceptable, must follow CLI Standard Details.

Item No. 2.08 Two (2) Compartment Sink Eagle Group FN2448-2-18-14/3-FD*C106

Spec-Master® Sink, two compartment, stainless steel, with 18" left and right-hand drainboards, 24" front-to-back x 24" Wide sink compartment, 14" Deep, with 9-1/2" High splash, stainless steel open frame base, boxed crossrails, 14/304 stainless steel, NSF

- Kit B, Spec-Master includes one (1) T&S faucet #313293 and two (2) lever waste
- 300722 - Lever Handle Drain, with 2" IPS connection and overflow

Custom Fabricated is acceptable, must follow CLI Standard Details.

Item No. 2.09 Work Table Eagle Group T3696SB*C106

Budget Series Work Table, 96" Wide x 36" Deep, 16/430 stainless steel flat top, rolled front edge, square turndown ends, Uni-Lok® gusset system, heavy gauge stainless steel undershelf, six (6) 1-5/8" diameter heavy gauge stainless steel legs with 1" adjustable stainless steel feet, NSF

Custom Fabricated is acceptable, must follow CLI Standard Details.

Item No. 2.10 Shelving NIKEC / Existing, Modify*C106

NIKEC / EXISTING, MODIFY

This item is not in the kitchen equipment contract

Item No. 2.11 Mop Sink Eagle Group F1916-12*C106

Mop Sink, floor mount, 24-5/8" Wide x 21-1/2" Deep, 304 stainless steel construction, 20" Wide x 16" front-to-back x 12" deep bowl, 16 gauge top with "V" edge, full skirt, 2" NPS nickel-plated cast bronze drain with stainless steel removable snap-on flat strainer plate

- 312688 - Mop Holder, three (3) pole, 14" x 1-1/4", project out 1-3/8"

Mount Mop Holder at 60" above finished floor

- 312690 - Service Faucet, 8" center, 1/2" NPT female inlets, includes vacuum breaker

Mount Service Faucet 36" above finished floor

Item No. 2.12 Hand Sink**Eagle Group HSA-10-1X*C106**

Hand Sink, wall mount, 13-1/2" Wide x 9-3/4" front-to-back x 6-3/4" deep bowl, 304 stainless steel construction, requires splash mounted faucet, deep-drawn seamless design-positive drain, inverted "V" edge

- 303987-X - Gooseneck Faucet, standard, splash mount, 4" O.C.,
- 318496-X - Paper Towel Dispenser, wall mounted, folded towel dispenser, 304 stainless steel construction
- 300602-X - Soap Dispenser, conventional, 12 ounce

Verify With Owner the requirement for the Soap and Paper Towel Dispenser.

Item No. 2.13 Exhaust Hood W/Make-up Air**Captive Air w/Make-Up Air *C106**

Exhaust Hood With Make-up Air

Please refer to Captive Air Drawings QF 201 Series

- Interconnected to Fire Suppression System Item # 2.14
- Six (6) inter-wired incandescent type light fixtures
- Piping for Fire Protection system, Item 2.14, to be provided internally in ventilator-by-ventilator manufacturer
- 18-gauge stainless steel removable enclosure panels from top of ventilator to underside of building ceiling
- Manufacturer to comply with all state and local codes
- Manufacturer to supervise unit installation
- 20-gauge stainless steel wall flashing, vertical grain and seams from wall curb to bottom edge of ventilation behind cooking equipment area and on adjacent wall area

NOTE: Kitchen Equipment Contractor to verify with GC the requirement for the Kitchen Exhaust System with Make-Up Air System. Kitchen Equipment Contractor to provide a 100% complete operating system. System will include the Canopy, Duct Work, and All Roof Fan Related Equipment.

Item No. 2.14 Fire Suppression System**Ansul R-102*C106**

System shall provide surface (plenum and duct) protection for the items of cooking equipment located beneath the Ventilator, Items 2.01, 2.02, 2.03, 2.04, 2.05 and 2.06 in accordance with all applicable codes, ordinances, regulations, and the provisions of NFPA 17A and 96 and UL300

All system piping fittings and conduit shall be concealed where possible and shall be stainless steel with no exposed threads and shall include material to extend nouncezles to proper position over specified cooking equipment

Power interruption device to prevent power and fuel with five-second battery back-up shut-off during a momentary power outage

System shall be complete with all valves, switches, pilot lights, re-set button, indicator lights, alarm, and time delay

System to be interwired with shunt-trip breaker and mechanical gas solenoid valve serving items of cooking equipment beneath the ventilator to provide for power and fuel shut-off in the event of system actuation

System piping to be provided internally in ventilators by manufacturer

Shut-off valve provided loose by KEC for field installation

Recessed remote fire pull station located per Plan between 4' 6" (1350mm) and 5' 0" (1500mm) above finished floor

Location of fire pull to be verified with local/state codes. (BOCA 93: pull to be minimum of 10' 3" (3,000mm) away from hood)

Manufacturer to comply with all state and local codes

Installation, field inspection, and certification to be performed by factory authorized Ansul agency

For Exhaust Hood Item #2.13 (and Items under Exhaust Hood Item #2.13)

KEC to provide and coordinate Fire Suppression System that is engineered per Local Code

Item No. 3.01 Dishwasher, Door Type	Hobart LT1-1*C106
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Dishwasher, door type, low temperature, fill and dump chemical sanitizing, field adjustable straight-thru/corner type, approx 37 racks/hour cap, detergent-sanitizer-rinse agent pump, delimiting cycle, stainless steel construction,

- KEC to verify incoming water temperature prior to ordering

Item No. 3.02 Hand Sink	Eagle Group HSA-10-1X*C106
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Hand Sink, wall mount, 13-1/2" Wide x 9-3/4" front-to-back x 6-3/4" Deep bowl, 304 stainless steel construction, requires splash mounted faucet, deep-drawn seamless design-positive drain, inverted "V" edge

- 303987-X -Gooseneck Faucet, standard, splash mount, 4" O.C.
- 318496-X - Paper Towel Dispenser, wall mounted, folded towel dispenser, 304 stainless steel construction
- 300602-X - Soap Dispenser, conventional, 12 ounce
- KEC to verify paper towel size with Owner prior to ordering

Verify With Owner the requirement for the Soap and Paper Towel Dispenser.

Item No. 3.03 Three (3) Compartment Sink	Eagle Group FFN2790-3-24-143*C106
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Spec-Master® Flush Front Sink, three compartment, 27" x 30" bowls, two (2) 24" Drainboards 14/304 stainless steel, 10" High backsplash with 3/4" Downturn at rear, stainless steel legs, gussets, crossrails and adjustable bullet feet

- E52 - High backsplash up to 13", per linear foot
- 300719 - Pre-Rinse Spray Unit, splash mount
- 301189 - Pre-Rinse Faucet, add-on 12" spout, to be used with 300719
- 300716 - Faucet, 12" long, splash-mounted mixing faucet, 8" centers, swing nouncezle
- 300722 - Lever Handle Drain, with 2" IPS connection and overflow

Custom Fabricated is acceptable, must follow CLI Standard Details.

Item No. 3.04 Soiled Dishtable	Eagle Group SDTL-48-14/3*C106
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Spec-Master® Soiled Dishtable, straight design, 48" Wide x 30" Deep x 43-1/2" High, left-to-right operation, 14/304 stainless steel top, 8" High backsplash, stainless steel hat channels, 20" x 20" x 5" Deep pre-rinse sink with basket drain, one (1) deck mount faucet hole for pre-rinse, raised rolled edges on front and side, stainless steel legs and side bracing, adjustable feet

- 301124 - Rack Slides, for dishtables
- 606434 - Pre-rinse Basket, with slide bar, for dishtables
- Provide pre-Rinse Faucet / Model # 313295, Eagle Group

Custom Fabricated is acceptable, must follow CLI Standard Details.

Item No. 3.05 Clean Dishtable	Eagle Group CDTR-72-14/3*C106
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Spec-Master® Clean Dishtable, straight design, 72" Wide x 30" Deep x 43-1/2" High, left-to-right operation, 14/304 stainless steel top, 8" High backsplash, stainless steel hat channels, raised rolled edges on front and side, stainless steel legs and crossbracing, adjustable metal feet

- E111 - Undershelving, stainless steel

Custom Fabricated is acceptable, must follow CLI Standard Details.

Item No. 3.06 Condensate Hood	Custom*C106
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Custom fabricated per Plan, Elevation #, and Detail 5.07.

KEC to provide shop drawings for review and approval prior to fabrication.

Item No. 4.01 Walk In Cooler Freezer Floor	NIKEC By/ GC *C106
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Replace Floors in Freezer

Not In Kitchen Equipment Contract

Item No. 4.02	Walk-in Freezer and Refrigerator Door Heaters	NIKEC By/ GC *C106
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Repair Walk-in Freezer and Refrigerator Door Heaters

Not In Kitchen Equipment Contract

Item No. 4.03	Walk In Cooler Refrigerator Floor	NIKEC By/ GC *C106
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Replace Floors in refrigerator

Not In Kitchen Equipment Contract

Item No. 4.04	Open Number	*C106
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Item No. 4.05	Warming Cabinet Parking	NIKEC / By EC*C106
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NIKEC / By EC

Warming Cabinet Parking/Station

Mount at 66" above finished floor

Not In Kitchen Equipment Contract

Item No. 4.06	Warming Cabinet Parking	NIKEC / By EC*C106
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NIKEC / By EC

Warming Cabinet Parking/Station

Mount at 66" above finished floor

Not In Kitchen Equipment Contract

Item No. 4.07	Drop Down Cord	NIKEC / By EC*C106
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NIKEC / By EC

Drop Down Cords

Not In Kitchen Equipment Contract

END OF THIS SECTION

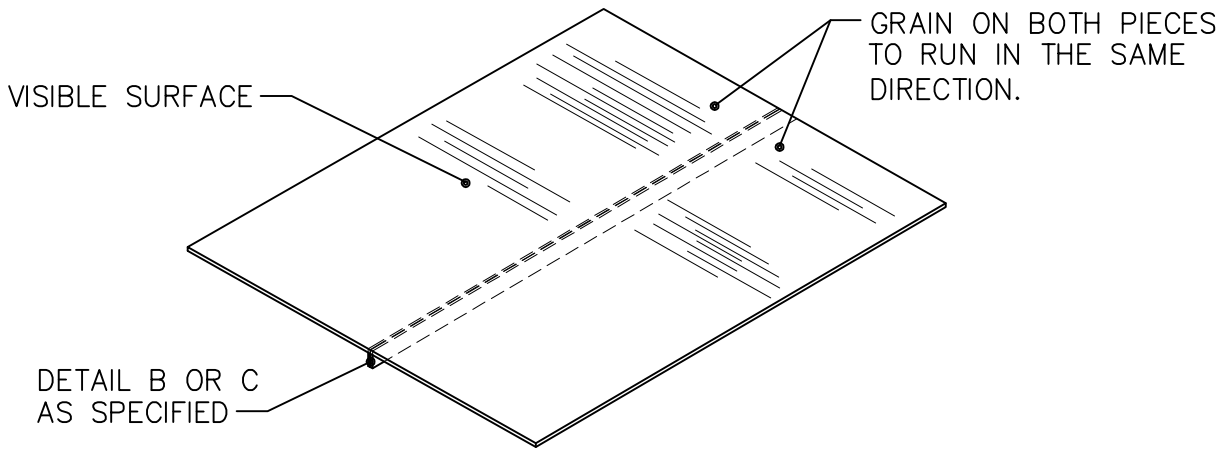
PART 5 - SCHEDULE OF DETAILS

A. The following Details are hereby made a part of these specifications and shall be utilized for referenced design requirements.

- 1.01 Field Joints & Assembly
- 1.02 Edges
- 1.02.1 Edges
- 1.03 Corner Guards
- 1.04 Backsplashes
- 1.05 Table & Drain Board Framework
- 1.06 Counter Framework
- 1.06.1 Counter Framework
- 1.06.2 Counter Framework
- 1.07 Table, Counter & Sink Legs

- 1.09 Flange Foot
- 1.10 Cross Bracing
- 1.10.1 Wall Support for Cross bracing
- 1.11 Under shelf
- 1.12 Over shelves & Supports
- 2.01 Work Table
- 2.01.1 Work Tables - Type
- 2.01.2 Prep Tables with Sink
- 2.02 Dish table
- 3.01 Sinks & Drainboards
- 3.01.1 Sinks & Drainboards
- 3.01.2 Sinks & Drainboards
- 5.07 Condensate Hood
- 8.02 Stainless Steel Wall Sheathing

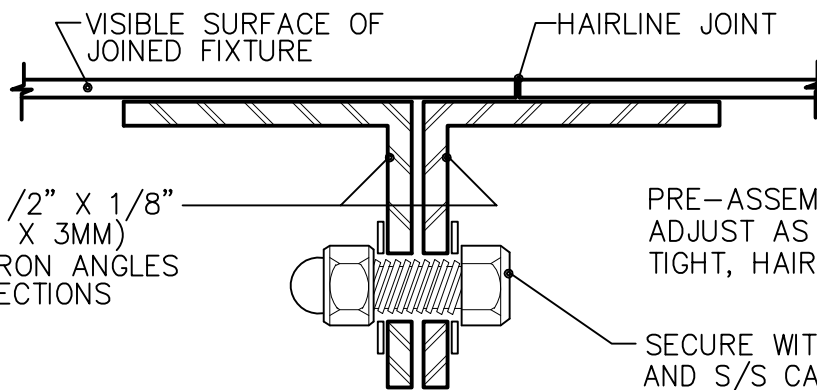
END OF SECTION



ON FIXTURES SPECIFIED WITH WELDED FIELD JOINTS, WELDS TO BE CONTINUOUS, GROUND AND POLISHED SO THAT NO EVIDENCE OF WELD IS VISIBLE.

WELDED BUTT JOINT

A



1-1/2" X 1-1/2" X 1/8"
(40MM X 40M X 3MM)
GALVANIZED IRON ANGLES
WELDED TO SECTIONS
OF FIXTURE.

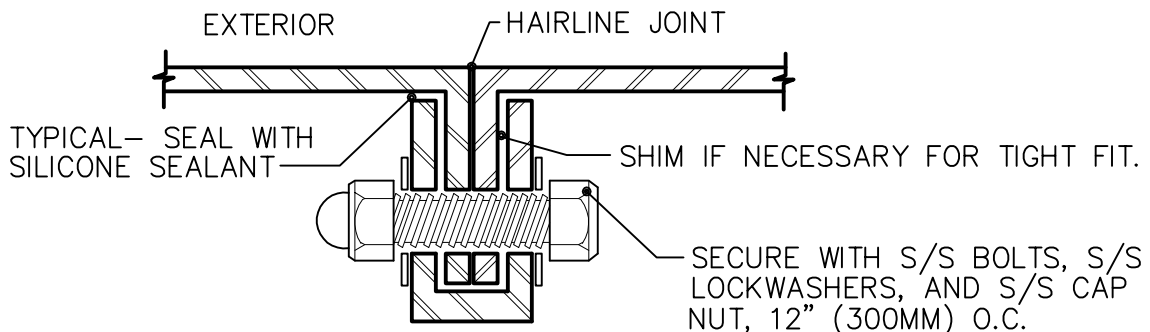
PRE-ASSEMBLE IN SHOP AND
ADJUST AS REQUIRED FOR
TIGHT, HAIRLINE JOINT.

SECURE WITH S/S BOLTS,
AND S/S CAP NUT 12" (300MM) O.C.

ITEMS TO BE JOINED ARE TO BE DRAWN TOGETHER, LEAVING ONLY A HAIRLINE SEAM.

BOLT DRAWN JOINT (MECHANICAL NON-WELDED)

B



TYPICAL- SEAL WITH
SILICONE SEALANT

SHIM IF NECESSARY FOR TIGHT FIT.

SECURE WITH S/S BOLTS, S/S
LOCKWASHERS, AND S/S CAP
NUT, 12" (300MM) O.C.

ITEMS TO BE JOINED ARE TO BE DRAWN TOGETHER, LEAVING ONLY A HAIRLINE SEAM.

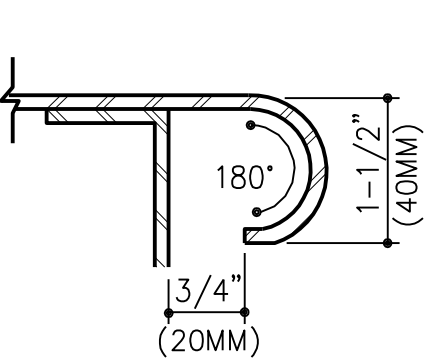
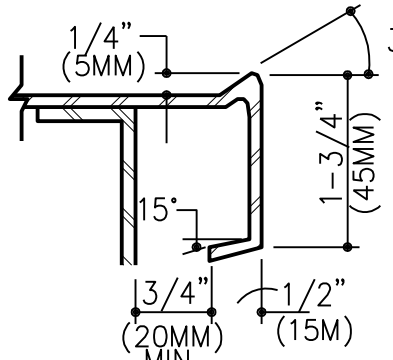
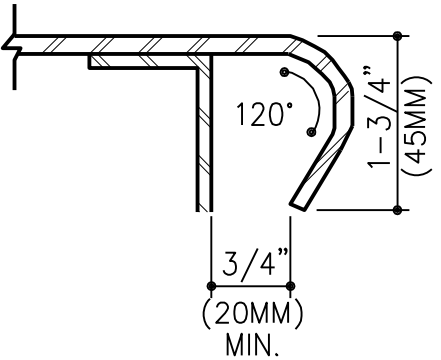
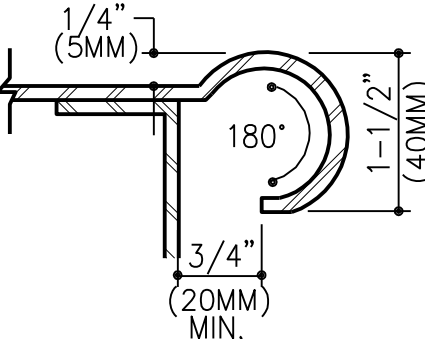
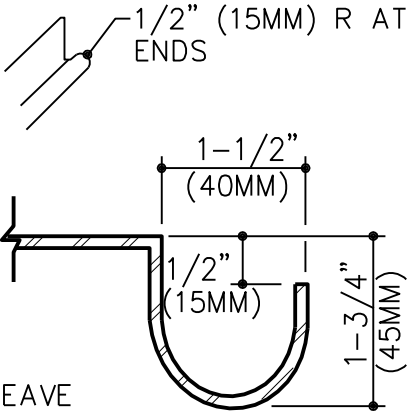
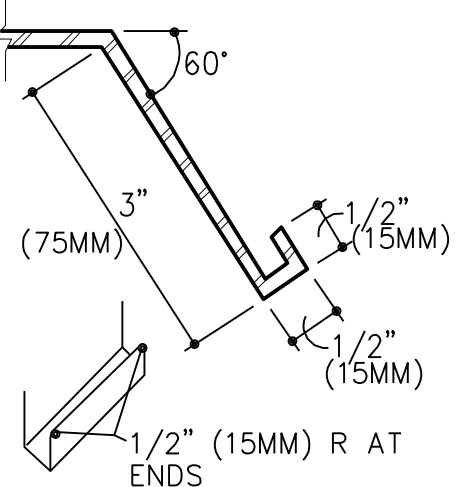
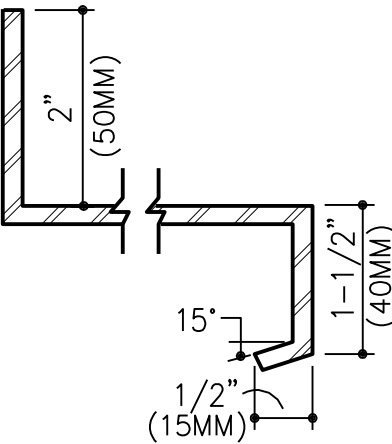
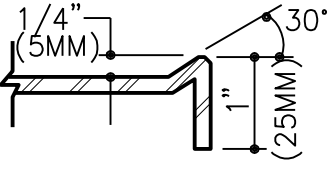
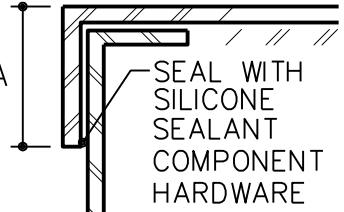
RAISED CAP SEAM- KNUCKLE JOINT

C

APPROVED: 05-13-13



APPROVED: 05-13-13

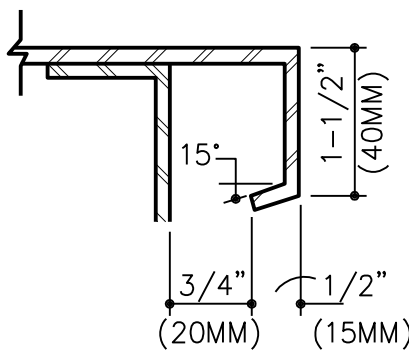
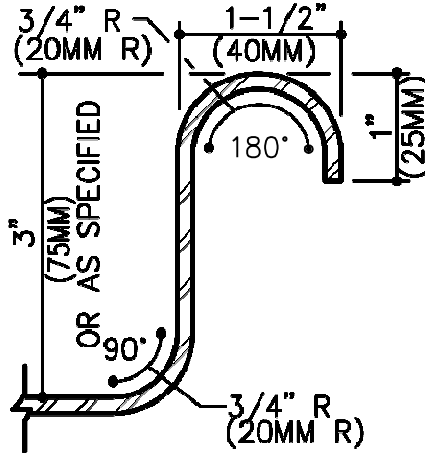
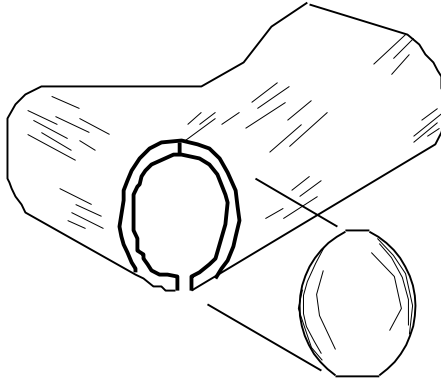
 <p>ROLLED A</p>	 <p>INVERTED "V" B</p>	 <p>BULL NOSE C</p>
 <p>MARINE D</p>	 <p>FLOUR GUTTER E</p> <p>LEAVE ENDS OPEN</p>	 <p>RECIPE CARD HOLDER F</p>
 <p>UNDERSHELF G</p>	 <p>INVERTED "V" RAISED OPENING H</p>	<p>A. AS SPECIFIED. TO MATCH ADJACENT EDGES.</p>  <p>SEAL WITH SILICONE SEALANT COMPONENT HARDWARE GROUP M90 SERIES NSF</p> <p>STRAIGHT TURN DOWN I</p>



EDGES
 NO SCALE CONTINUED ON 1.02.1

STANDARD DETAIL
1.02

APPROVED: 05-13-13

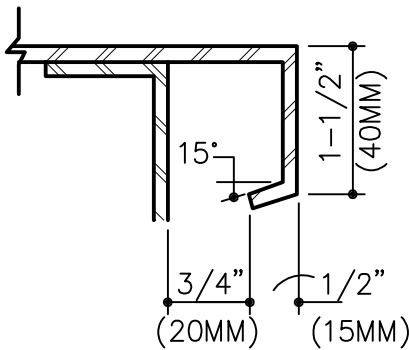
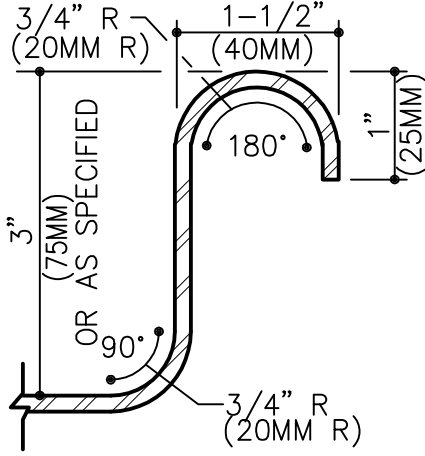
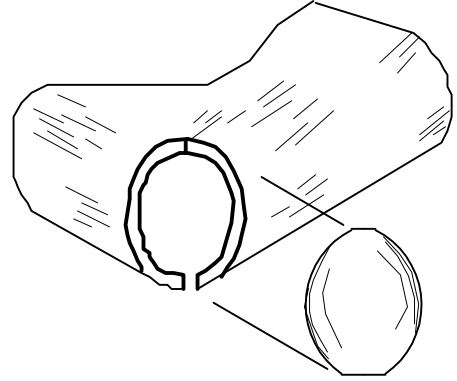
 <p>TURNED DOWN J</p>	 <p>UP & ROLLED K</p>	<p>FULLY WELD FILLER PIECE IN PLACE, GRIND SMOOTH AND POLISH TO APPEAR INTEGRAL.</p>  <p>STANDARD CORNER L</p>



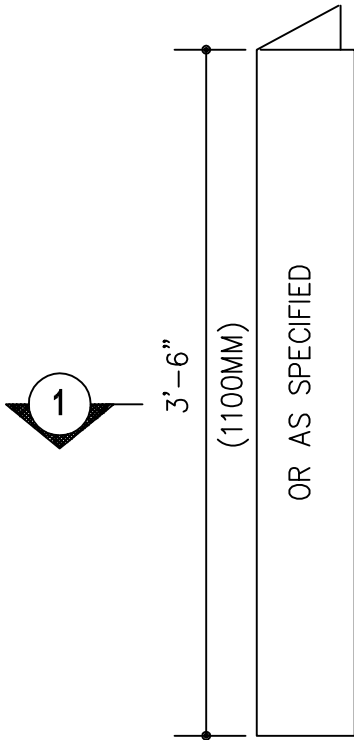
EDGES
 NO SCALE CONTINUED ON 1.02.1

STANDARD DETAIL
1.02

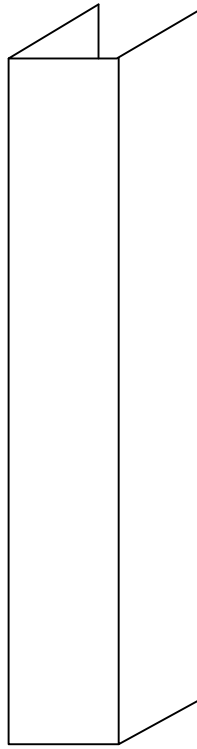
APPROVED: 05-13-13

 <p>TURNED DOWN J</p>	 <p>UP & ROLLED K</p>	<p>FULLY WELD FILLER PIECE IN PLACE, GRIND SMOOTH AND POLISH TO APPEAR INTEGRAL.</p>  <p>STANDARD CORNER L</p>

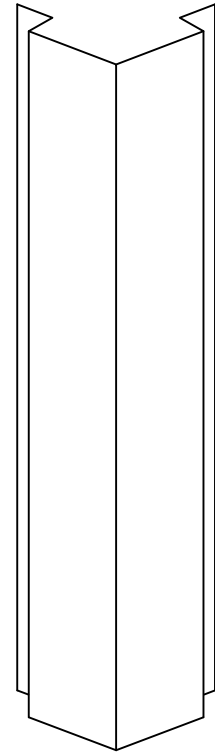
A
ANGLE TYPE



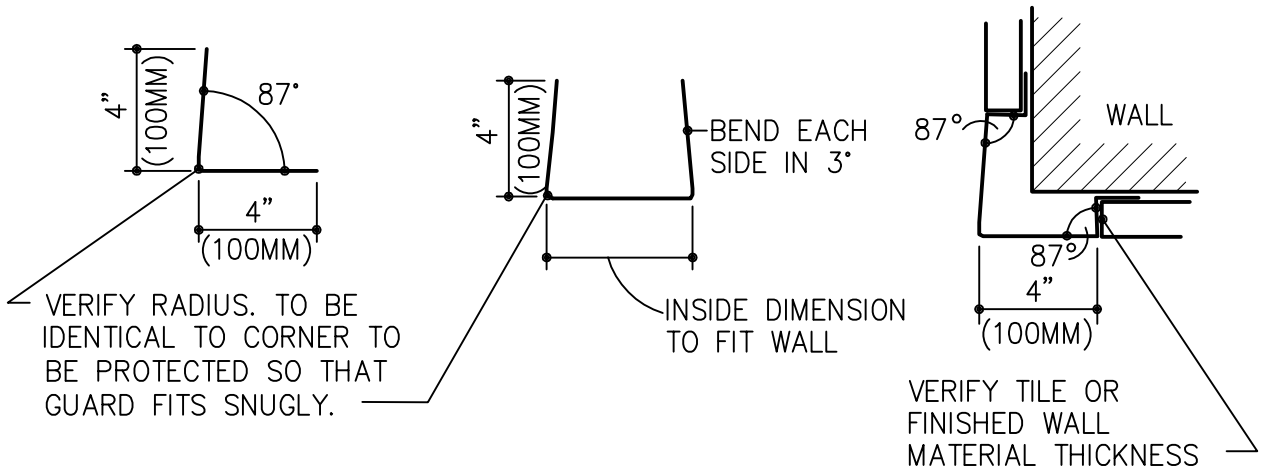
B
**CHANNEL TYPE
OR WALL CAP**



C
CHANNEL PLUS



ISOMETRIC VIEW

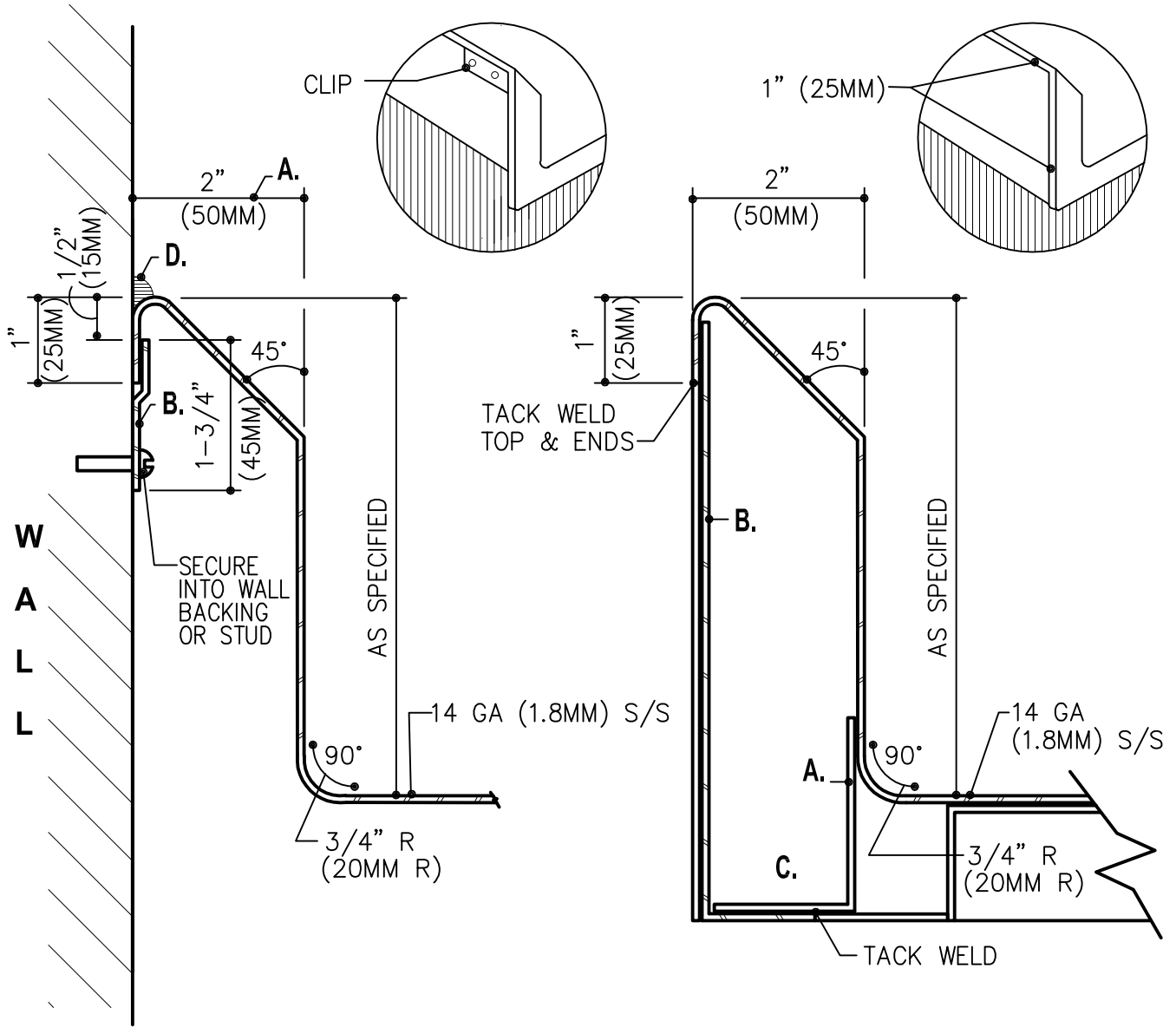


SECTION 1

NOTE: MOUNT 16 GA.(1.5MM) #4 FINISH STAINLESS STEEL CORNER GUARDS ON CORNERS IMMEDIATELY ABOVE 6" (150MM) HIGH COVE BASE TILE WITH SUITABLE S/S FASTENERS AND SEAL.

APPROVED: 05-13-13

APPROVED: 05-13-13



WALL UNIT-A

FREE STANDING UNIT-B

- A.** 2-1/2" (65MM) AT SINKS TO ALLOW FOR CONNECTED OVERFLOW.
- B.** 12 GA (2.6MM) S/S CLIP, 4" (100MM) LONG, FASTENED TO WALL AT EACH END & CENTER OF UNIT. SECURE TO WALL WITH A MINIMUM OF TWO. USE 1/4" (5MM) X 20 S/S BOLTS WITH TOGGLES OR EXPANSION SHIELDS.
- C.** EXPOSED ENDS TO BE FULLY WELDED CLOSED.
- D.** SEAL TO WALL ALL AROUND.

- A.** 2-1/2" X 1-1/2" (65MM X 40MM) 14 GA. (1.8MM) S/S CLIP WELDED TO SPLASH. RUN FULL LENGTH
- B.** 18 GA (1.2MM) S/S PANEL TACK WELD TO CLIPS AND SPLASH.
- C.** EXPOSED ENDS TO BE FULLY CLOSED.

NOTE: IF ACCESS TO SPLASH ON DETAIL B IS REQUIRED FOR ELECTRICAL OR PLUMBING, USE REMOVABLE PANEL AS SHOWN ON STANDARD DETAIL 1.04.1



BACKSPLASHES

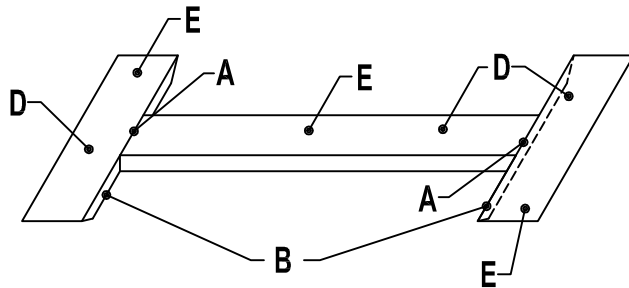
NO SCALE

SEE ALSO: 1.01

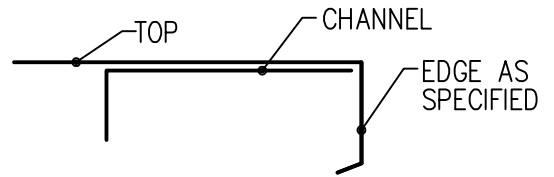
STANDARD DETAIL

1.04

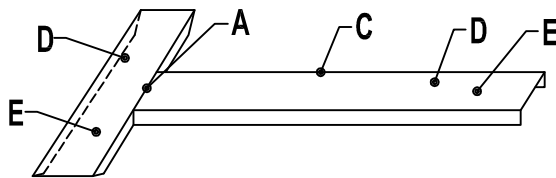
APPROVED: 05-13-13



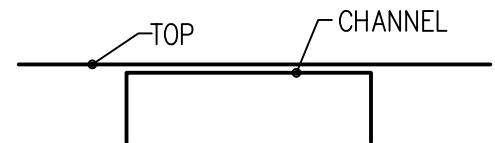
A WORK TABLES AND DISH TABLES



**BATTEN CONSTRUCTION STYLE
14 GA. END/EDGE CHANNEL AT
WORKTABLE**



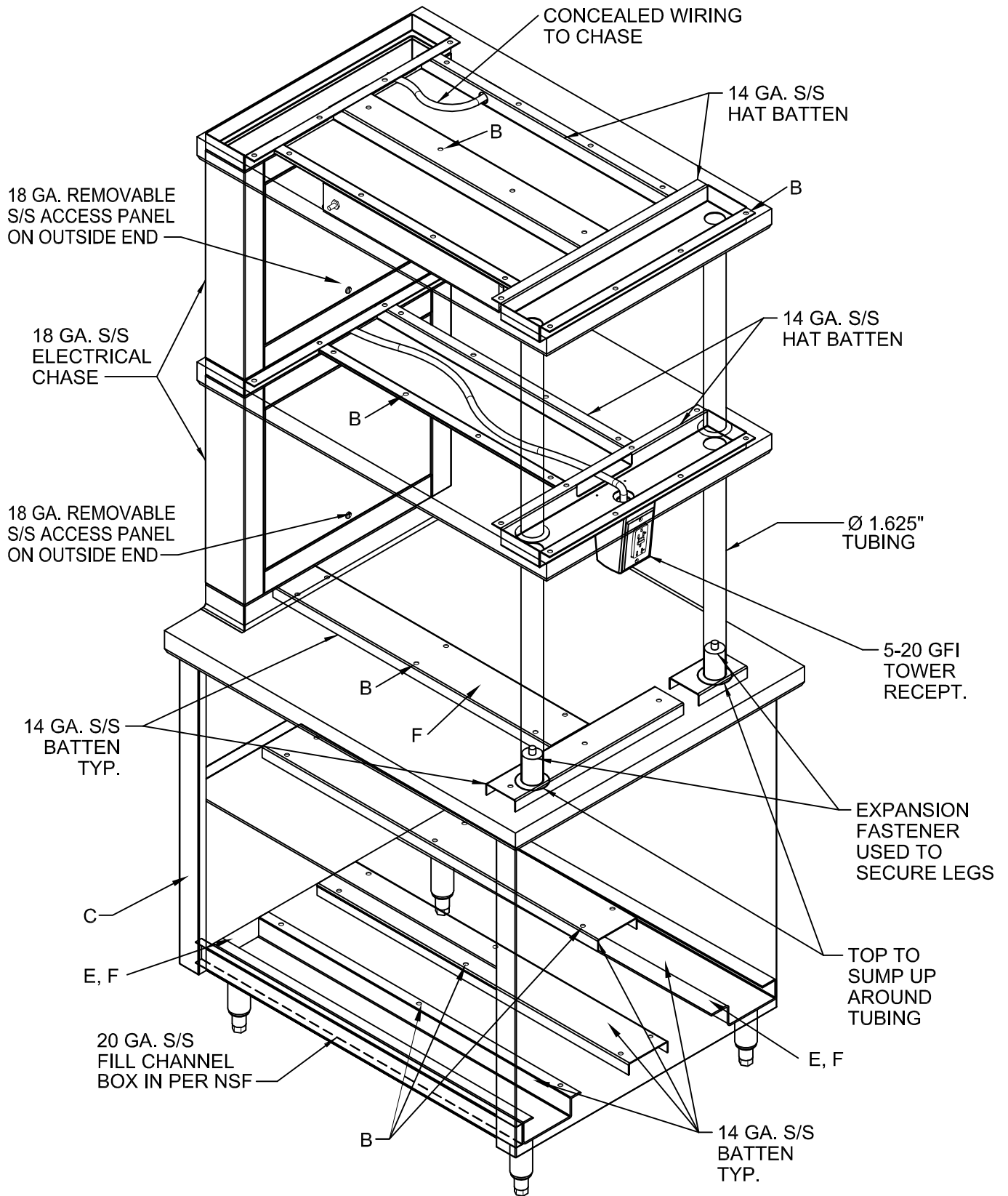
B SINK DRAINBOARDS



**BATTEN CONSTRUCTION STYLE
14 GA. CENTER
HAT CHANNEL**

- A.** FULLY WELDED CONSTRUCTION.
- B.** CHANNEL LOCATION – ENDS AND INTERMEDIATES MAXIMUM 5'-6" (1650MM) ON CENTER.
- C.** DELETE CENTER CHANNEL WHERE LARGE MOBILE TRASH CANS & UNDERCOUNTER DISHWASHERS REQUIRE CLEARANCE HEIGHT.
- D.** SECURE TOP TO FRAMEWORK WITH WELDED STUDS, S/S LOCKWASHERS AND S/S CAP NUTS. MAXIMUM 15" (380MM) ON CENTER.
- E.** SOUND DEADING CHG Q85-5225 TACKY TAPE BETWEEN S/S TOP AND FRAME SEAL WITH CLEAR SILICONE SEALANT.

APPROVED: 05-13-13



REFER TO NOTES ON DTL. 1.06.2 AND DETAILS 1.01, 1.02, 1.07 AND SPECIFICATIONS FOR COUNTER



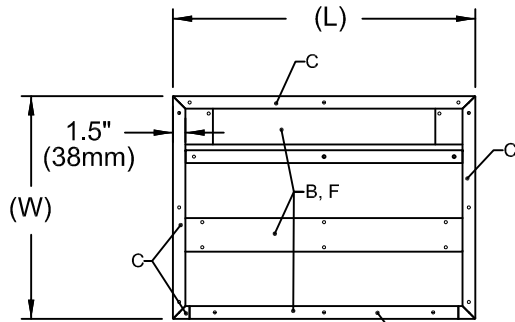
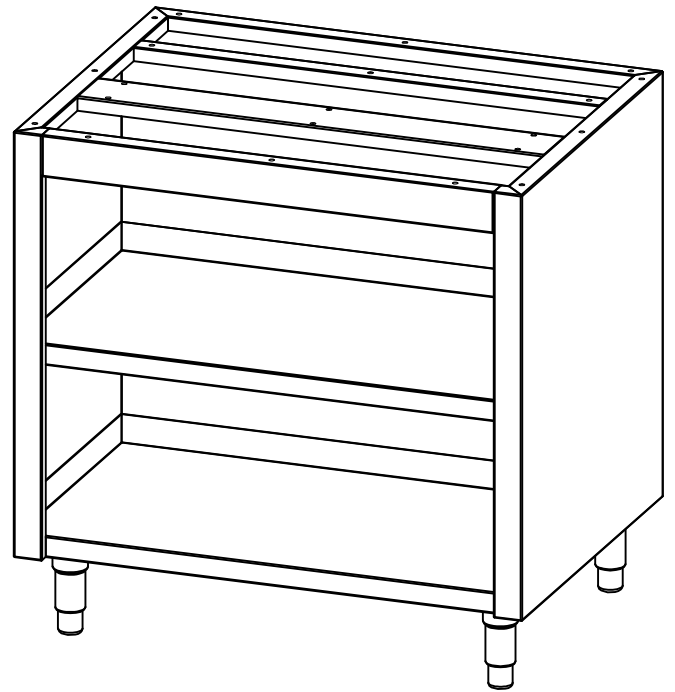
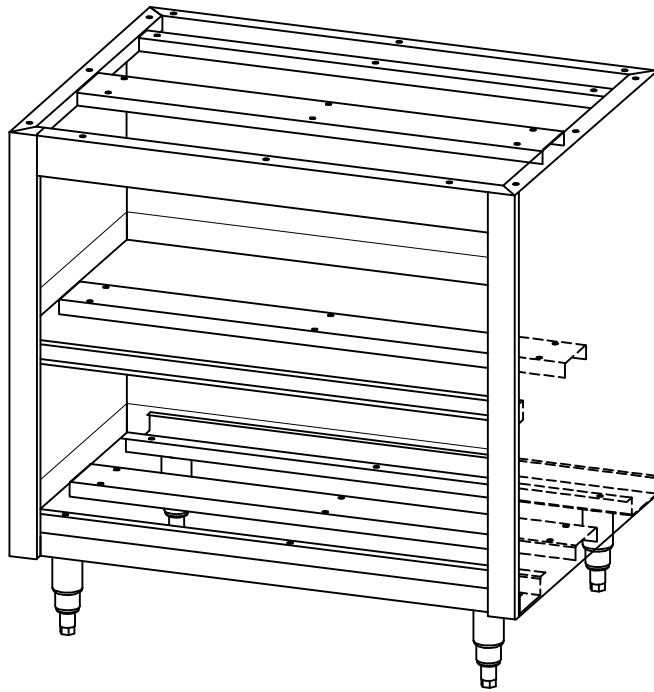
COUNTER FRAMEWORK

NO SCALE

CONTINUED ON 1.06.1, 1.06.2
SEE ALSO: 1.01, 1.02, 1.07

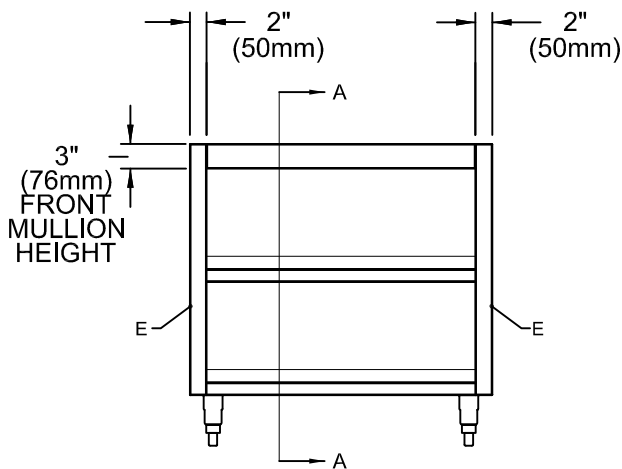
STANDARD DETAIL

1.06

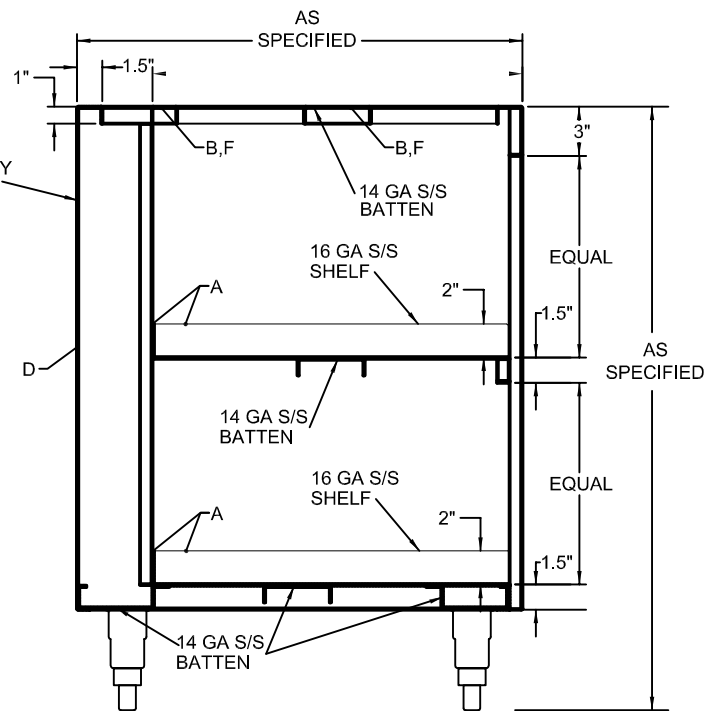


PLAN

18 GA S/S CABINET BODY



ELEVATION



SECTION A-A

REFER TO NOTES ON DTL. 1.06.2 AND DETAILS 1.01, 1.02, 1.07 AND SPECIFICATIONS FOR COUNTER

APPROVED: 05-13-13



COUNTER FRAMEWORK

NO SCALE CONTINUED ON 1.06, 1.06.2
SEE ALSO: 1.01, 1.02, 1.07

STANDARD DETAIL

1.06.1

APPROVED: 05-13-13

- A. TACK WELDED CONSTRUCTION.
- B. SECURE TOP TO FRAMEWORK WITH WELDED STUDS, S/S LOCKWASHERS, AND S/S CAP NUTS. MAXIMUM 15" (380MM) ON CENTER.
- C. UNIBODY CONSTRUCTION – ENDS; INTERMEDIATE MAXIMUM 5'-6" (1650MM) ON CENTER
- D. CAFETERIA FRONT ANGLE (CHANNEL) LOCATION – ENDS; INTERMEDIATES TO CORRESPOND TO PILASTERS, TRAY SLIDE BRACKETS, BREATH PROTECTORS, DISPLAY SHELVES PANEL SPACING, MAXIMUM 4'-0" (1200MM) ON CENTER. RE: STANDARD DETAILS. 4.01 THRU 4.04.
- E. WORK SIDE LOCATION – ENDS; SIDE OF OPENINGS; INTERMEDIATES MAXIMUM 5'-6" (1650MM) ON CENTER.
- F. SOUND DEADEN TAPE. CHG Q85-5225 TACKY TAPE BETWEEN S/S TOP AND FRAME. SEAL WITH CLEAR SILICONE SEALANT.



COUNTER FRAMEWORK

NO SCALE CONTINUED ON 1.06, 1.06.1
SEE ALSO: 1.01, 1.02, 1.07

STANDARD DETAIL

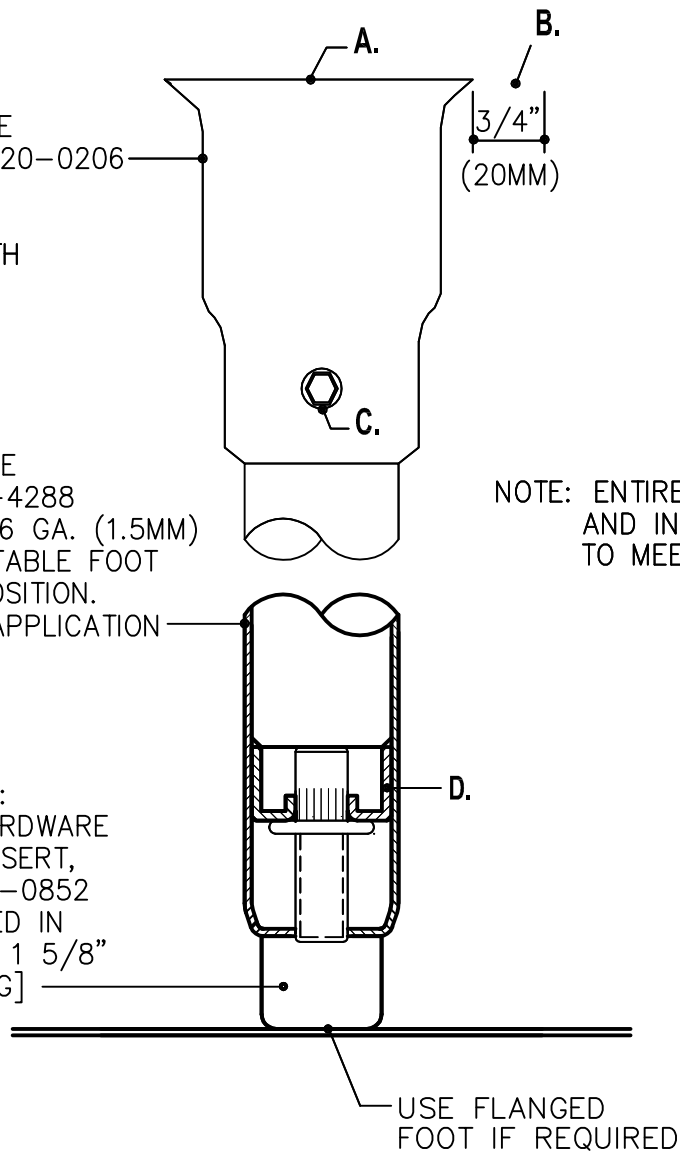
1.06.2

COMPONENT HARDWARE
GUSSET, MODEL NO. A20-0206

S/S DIE-STAMPED WITH
LOCKING SET SCREW

COMPONENT HARDWARE
LEG, MODEL NO. A46-4288
1 5/8" (41MM) O.D. 16 GA. (1.5MM)
36" O.A. WITH ADJUSTABLE FOOT
INSERT, IN CLOSED POSITION.
ADJUST HEIGHT PER APPLICATION

ALTERNATE LEG:
COMPONENT HARDWARE
ROUND FOOT INSERT,
MODEL NO. A10-0852
[TO BE INSERTED IN
16 GA. (1.5MM) 1 5/8"
(41MM) O.D. LEG]



NOTE: ENTIRE FINISHED STRUCTURE
AND INDIVIDUAL COMPONENTS
TO MEET NSF REQUIREMENTS

- A.** FULLY WELD GUSSET TO FRAMEWORK OR SINK.
- B.** 3/4" (20MM) MINIMUM CLEARANCE ALL AROUND.
- C.** SET SCREW NOT VISIBLE TO WORKING SIDE OF EQUIPMENT.
- D.** FOOT SET AT MIDPOINT TO ALLOW 5/8" (13MM) ADJUSTMENT UP AND 5/8" DOWN. WITHOUT THREAD EXPOSURE.

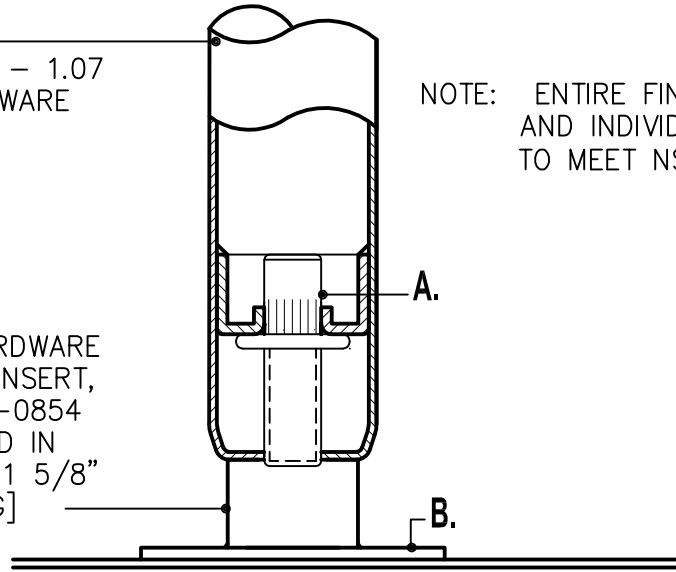
NOTE: SEE SPECIAL DETAILS IF SEISMIC CONDITIONS APPLY

APPROVED: 05-13-13

APPROVED: 05-13-13

LEG
STANDARD DETAIL - 1.07
COMPONENT HARDWARE
A46-4288

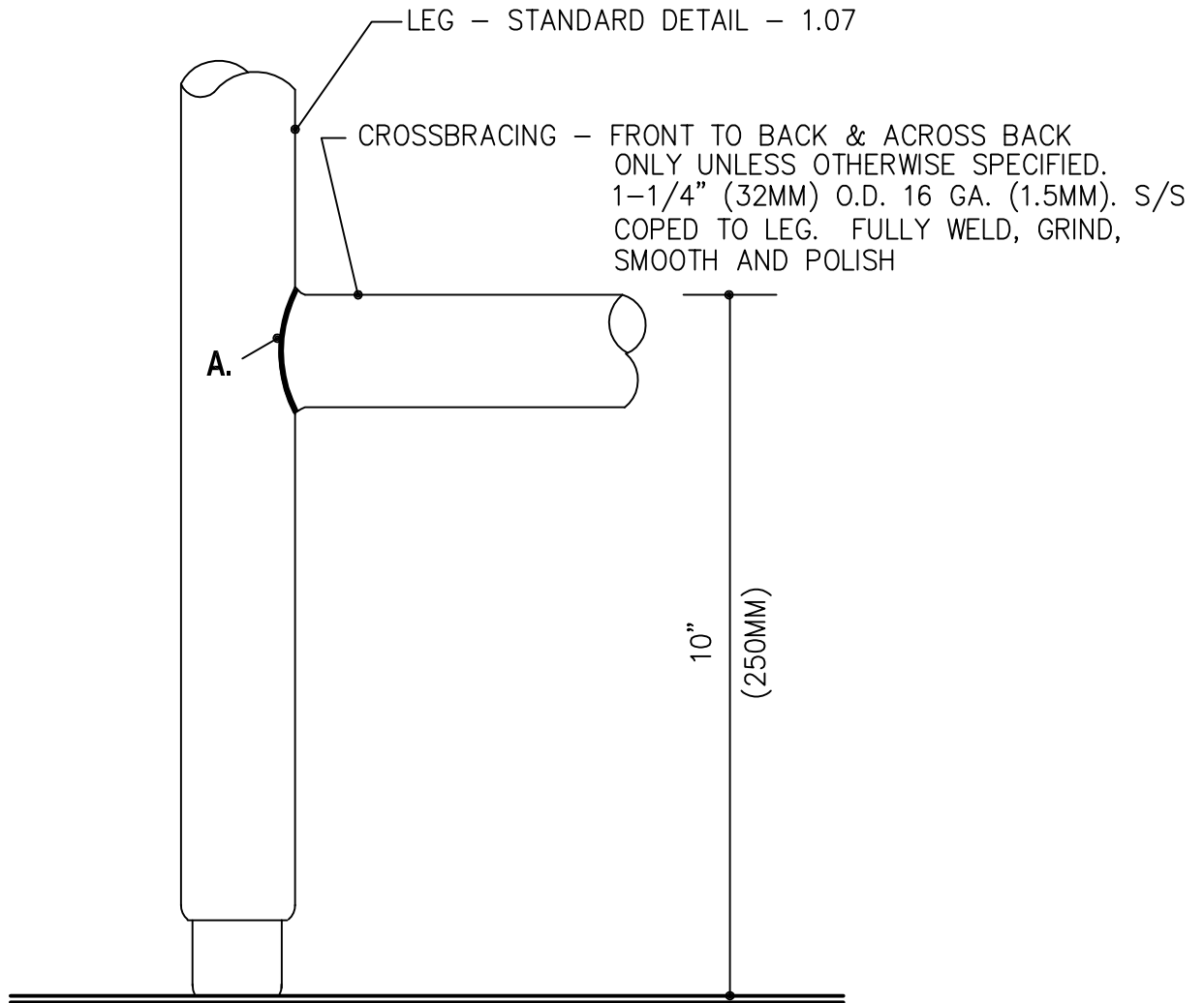
ALTERNATE LEG:
COMPONENT HARDWARE
FLANGED FOOT INSERT,
MODEL NO. A10-0854
[TO BE INSERTED IN
16 GA (1.5MM), 1 5/8"
(41MM) O.D. LEG]



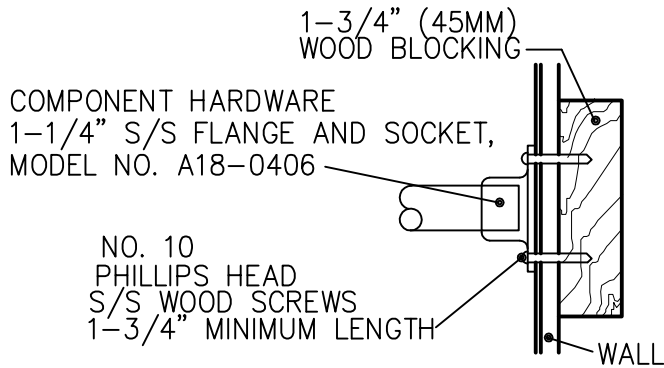
NOTE: ENTIRE FINISHED STRUCTURE
AND INDIVIDUAL COMPONENTS
TO MEET NSF REQUIREMENTS

- A. FOOT SET AT MIDPOINT TO ALLOW 5/8" (16MM) ADJUSTMENT UP AND 5/8" (16MM) DOWN WITHOUT EXPOSED THREADS.
- B. ANCHOR FLANGE FOOT TO FLOOR WITH COUNTERSINK S/S BOLTS.

APPROVED: 11-01-02

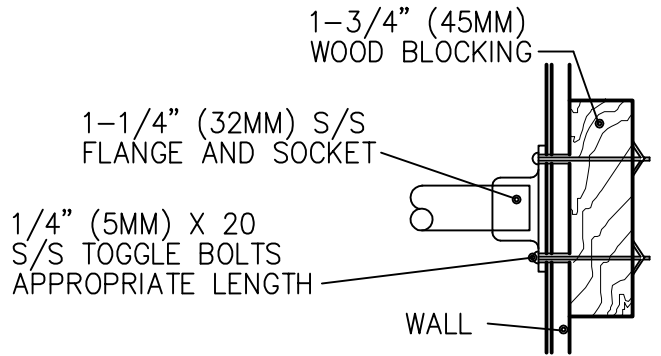


A. FULLY WELD, GRIND SMOOTH AND POLISH.



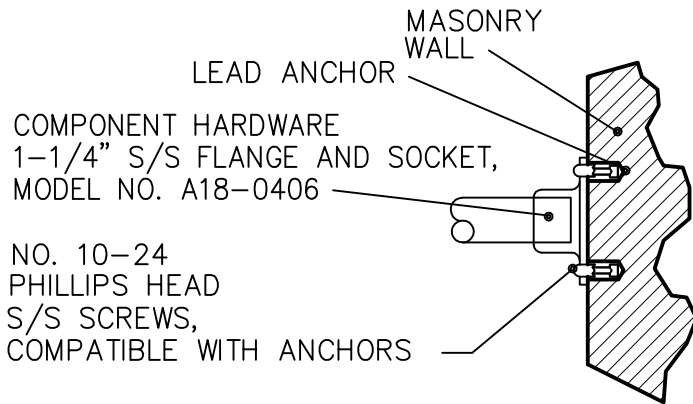
S/S FLANGE MOUNTED WITH WOOD SCREWS

A



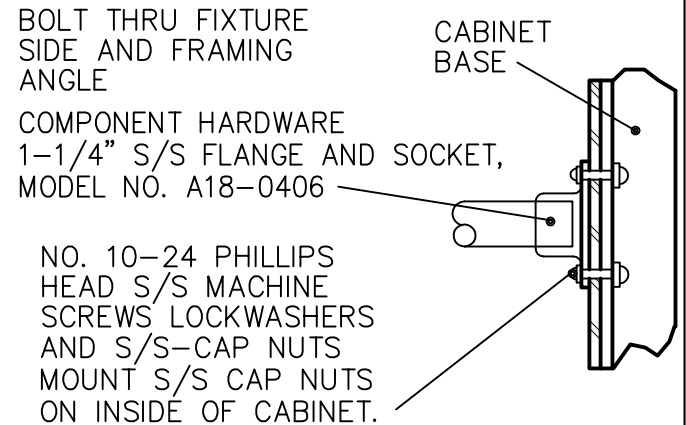
S/S FLANGE MOUNTED WITH S/S TOGGLE BOLTS

B



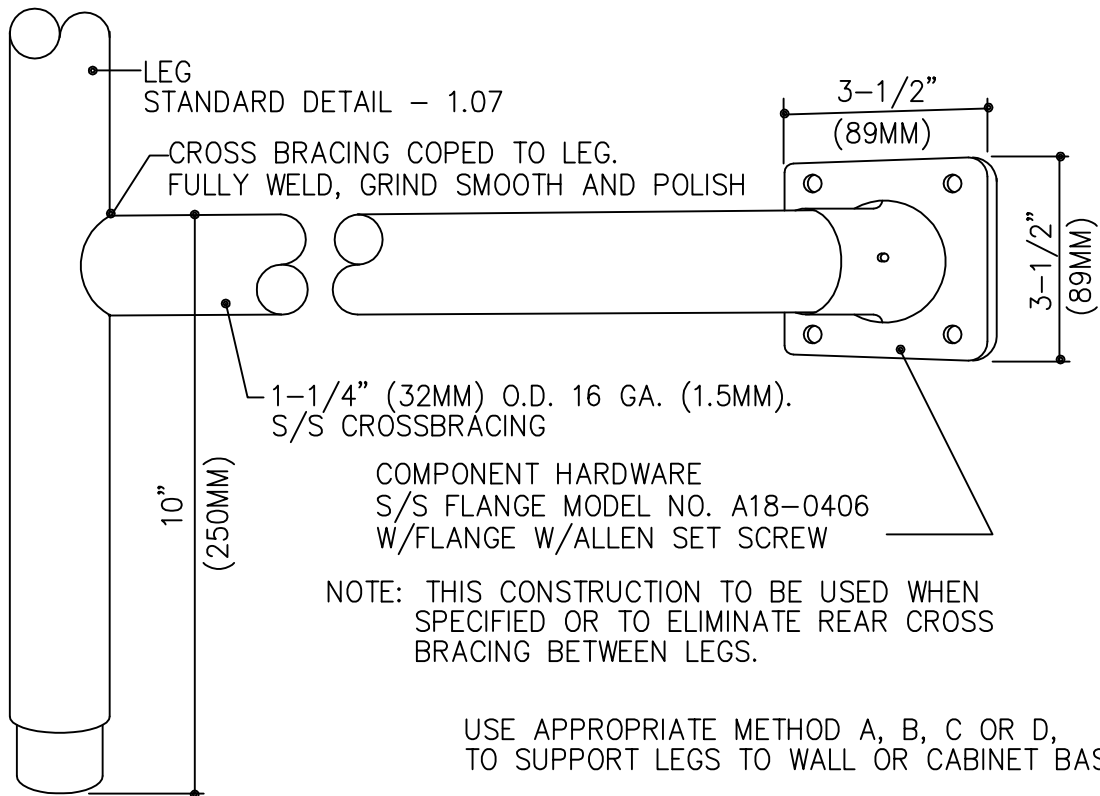
MASONRY WALL MOUNTED

C



CABINET BASE MOUNTED

D



APPROVED: 11-01-02



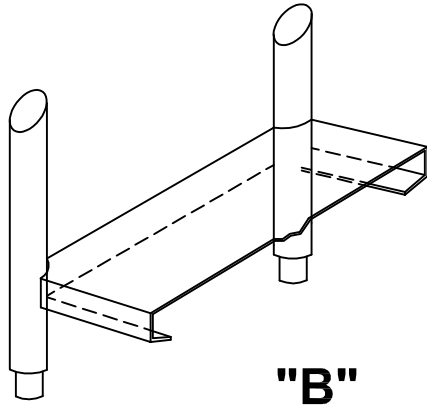
WALL SUPPORT FOR CROSSBRACING

NO SCALE

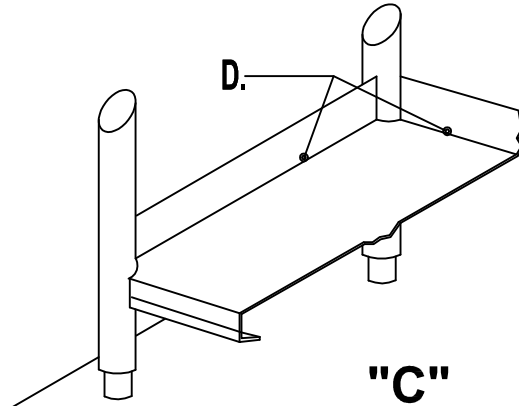
SEE ALSO 1.07 & 1.10

STANDARD DETAIL

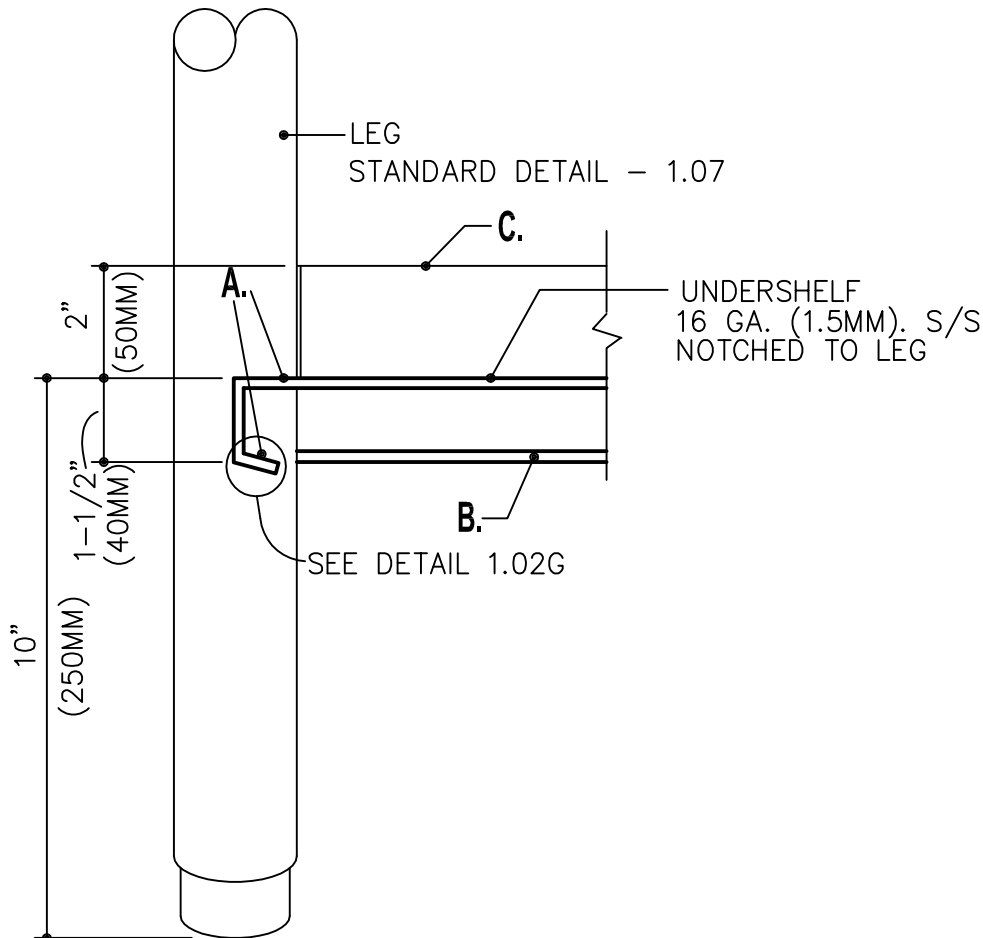
1.10.1



"B"



"C"



- A. FULLY WELD VERTICAL SURFACES. SILICONE HORIZONTAL SURFACE TO LEG.
- B. ON ISLAND TABLES, TURN DOWN ALL SIDES AS SHOWN IN "B" UNLESS OTHERWISE SPECIFIED.
- C. ON TABLES AGAINST WALLS, TURN REAR AND ENDS UP 2" (50MM) AS SHOWN IN "C" UNLESS OTHERWISE SPECIFIED.
- D. COVED BEND ACCEPTABLE, BUT NOT REQUIRED.

APPROVED: 05-13-13

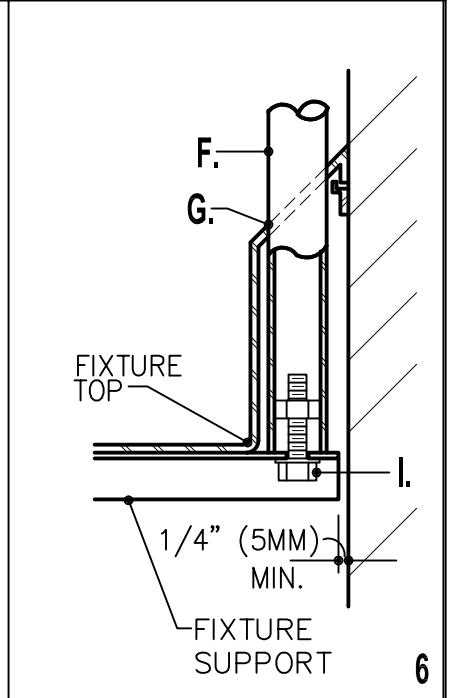
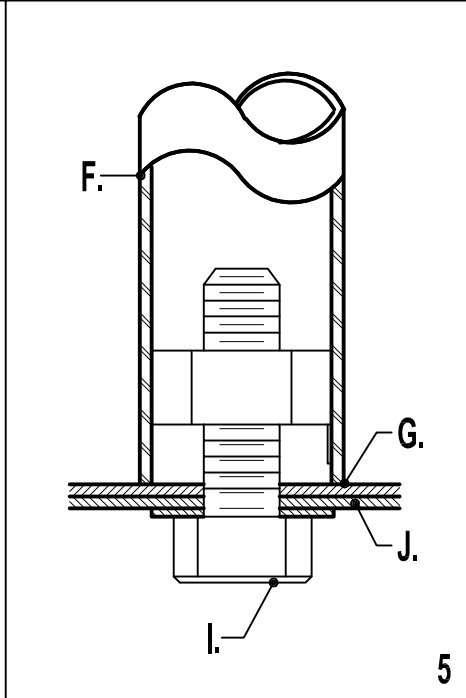
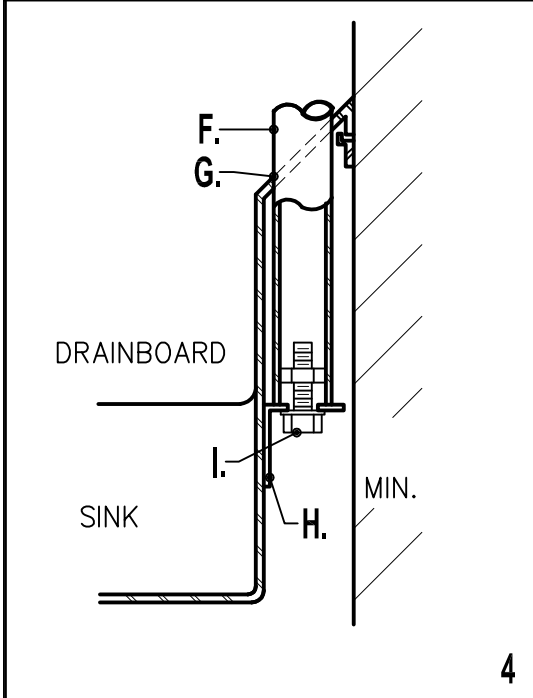
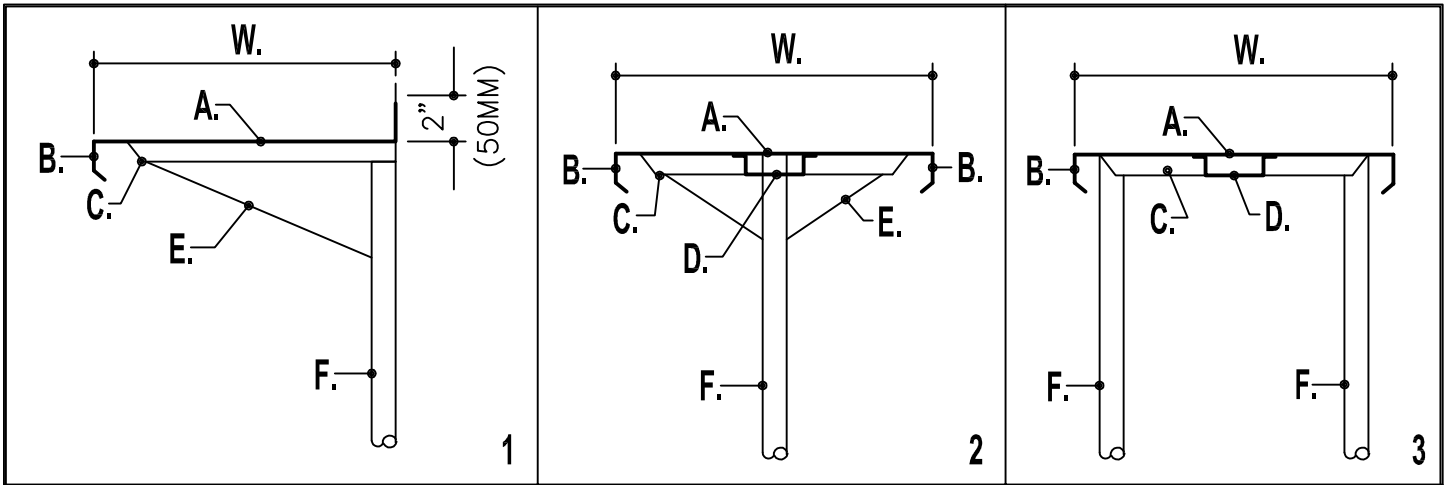


UNDERSHELF
NO SCALE

SEE ALSO: 1.02G, 1.07

STANDARD DETAIL

1.11



- A.** 16 GA. (1.5MM) S/S SHELF.
- B.** STANDARD DETAIL – 1.02J EDGE AS SPECIFIED.
- C.** 1-1/2" X 4" X 1-1/2" (38MM X 100MM X 38MM) 14 GA. HAT BATTEN (1.8MM) S/S CHANNEL WITH CHAMFERED ENDS.
- D.** 1-1/2" X 4" X 1-1/2" (38MM X 100MM X 38MM) 14 GA. HAT BATTEN (1.8MM) S/S LENGTHWISE CHANNEL WHEN LENGTH BETWEEN SUPPORTS EXCEEDS 42" (1050MM).
- E.** 14 GA. (1.8MM) S/S BRACKETS FULLY WELDED TO SUPPORT CHANNEL.
- F.** 1-5/8" (40MM) O.D. 16 GA. (1.5MM) S/S UPRIGHT. MAXIMUM 5'-0" (1525MM) ON CENTER.
- G.** TIGHT FIT & SEAL.
- H.** 1-1/2" X 1-1/2" (40MM X 40MM) 12 GA. S/S CLIPS WELDED TO REAR OF SINK AT DRAINBOARD HEIGHT W/HOLE FOR BOLT TO SECURE UPRIGHT.
- I.** 3/8" (10MM) 16 GA. (1.5MM) S/S HEX HEAD BOLT, COMPONENT HARDWARE & S/S LOCKWASHER W/ J58-0014 PLATED STEEL NUT. NUT WELDED IN UPRIGHT F.
- J.** SECURE TO HAT CHANNEL.
- W.** WIDTH AS SPECIFIED.

APPROVED: 05-13-13



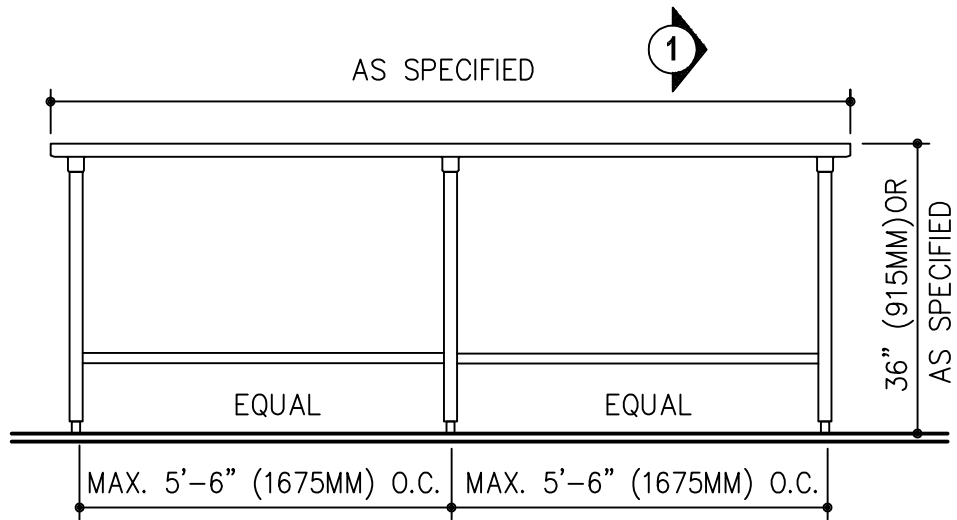
OVERSHELVES AND SUPPORTS

NO SCALE

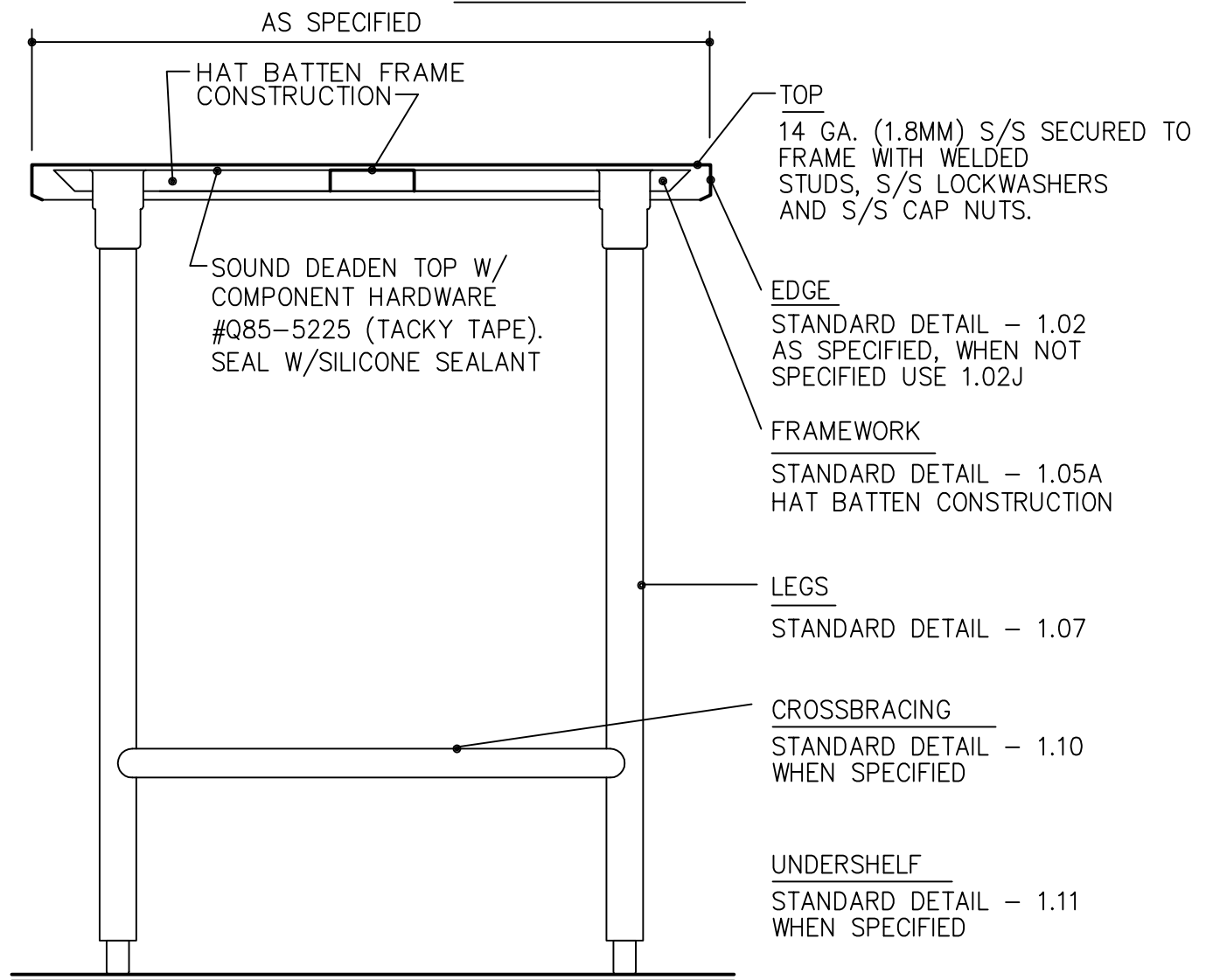
CONTINUED ON 1.12.1
SEE ALSO: 1.02, 1.12.1, 1.12.2, 4.02, 4.03

STANDARD DETAIL

1.12



FRONT ELEVATION



SECTION 1

APPROVED: 05-13-13

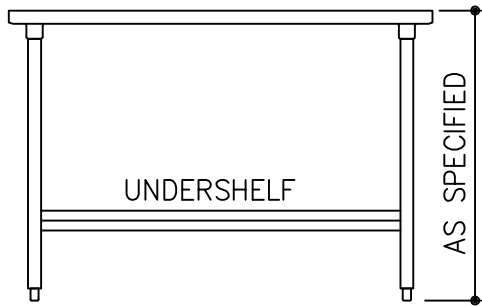
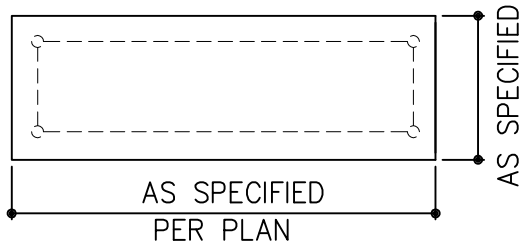


WORK TABLE

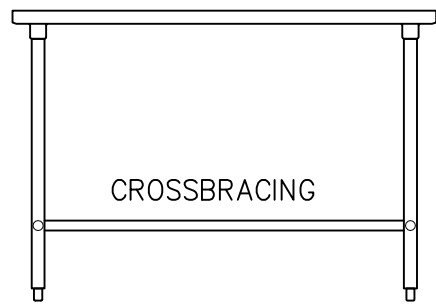
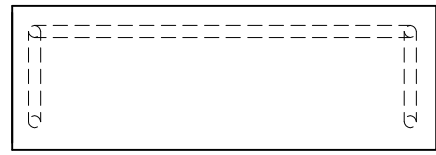
NO SCALE CONTINUED ON 2.01.1
SEE ALSO 1.02, 1.05, 1.07, 1.10, 1.11

STANDARD DETAIL

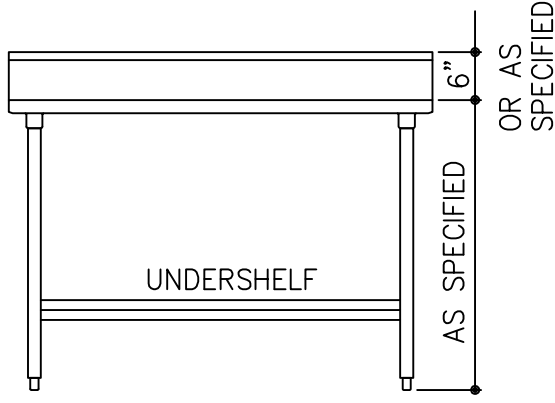
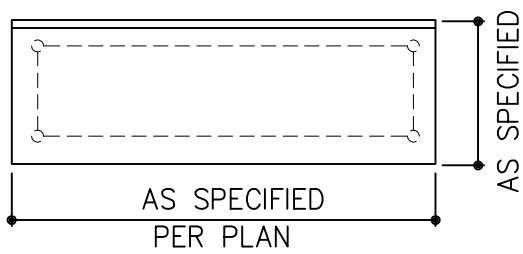
2.01



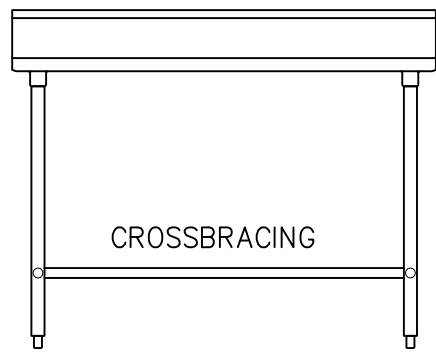
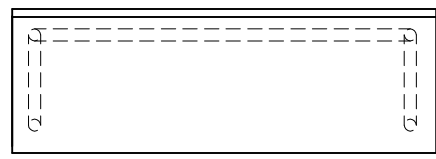
"A" ISLAND TABLE-UNDERSHELF



"B" ISLAND TABLE-CROSSBRACING



"C" TABLE W/SPLASH-UNDERSHELF



"D" TABLE W/ SPLASH-CROSSBRACING

APPROVED: 05-13-13



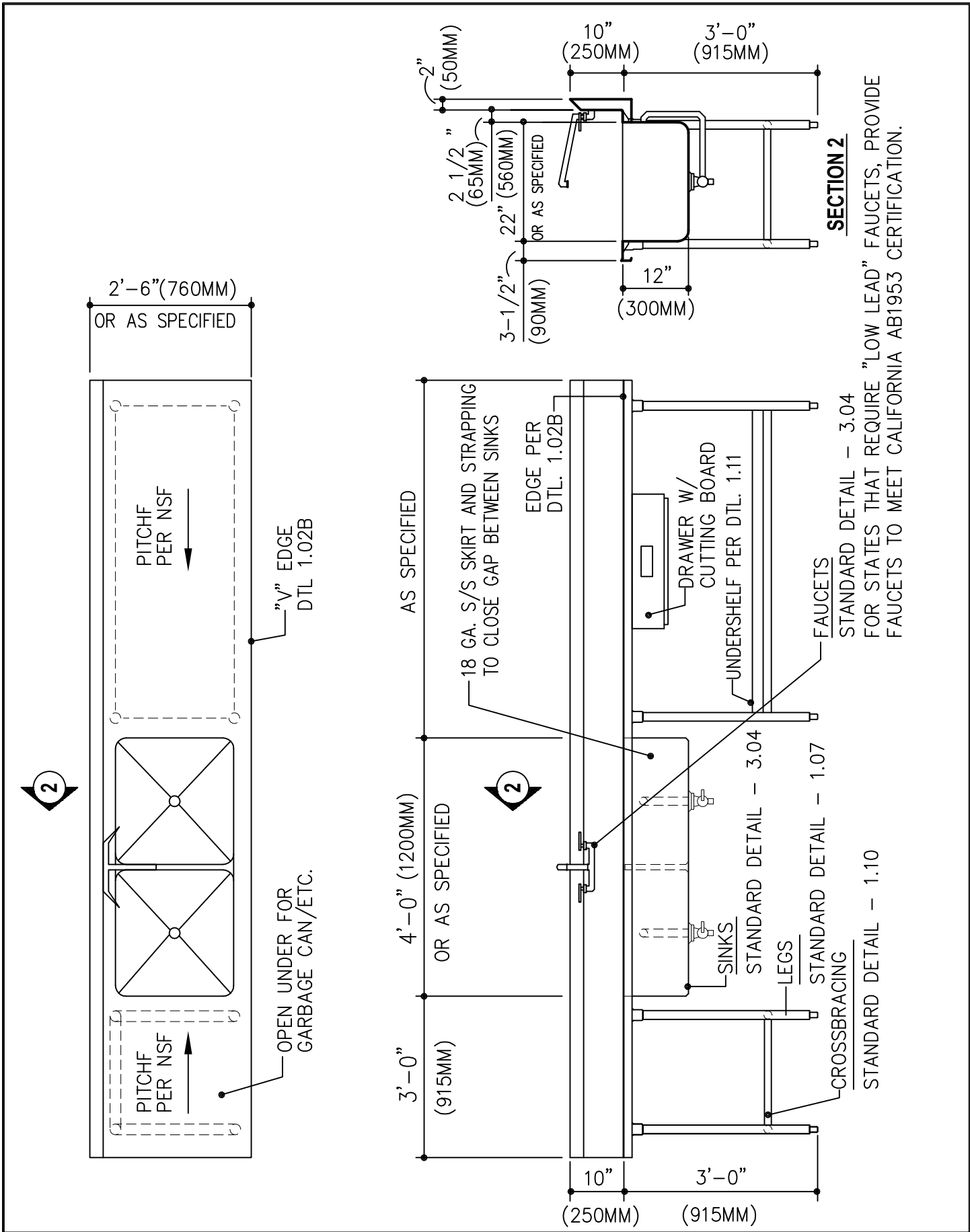
WORK TABLES - TYPE

NO SCALE

SEE ALSO 1.02, 1.05, 1.07, 1.10, 1.11

STANDARD DETAIL

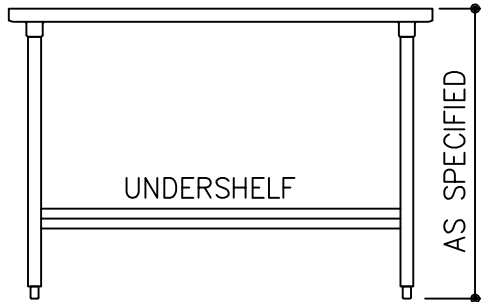
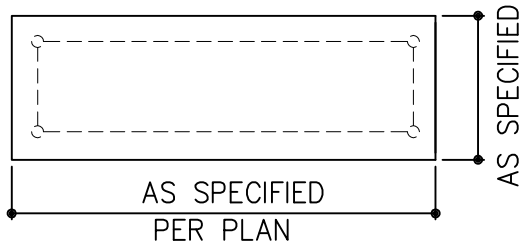
2.01.1



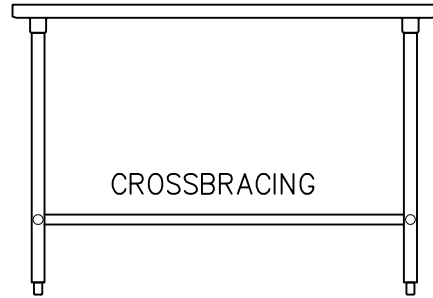
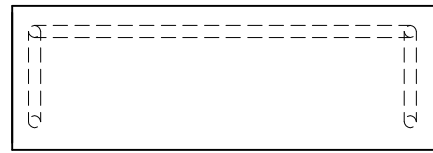
PREP. TABLE WITH SINKS
 NO SCALE SEE ALSO 1.02, 1.05, 1.07, 1.10, 1.11, 3.04

STANDARD DETAIL
2.01.2

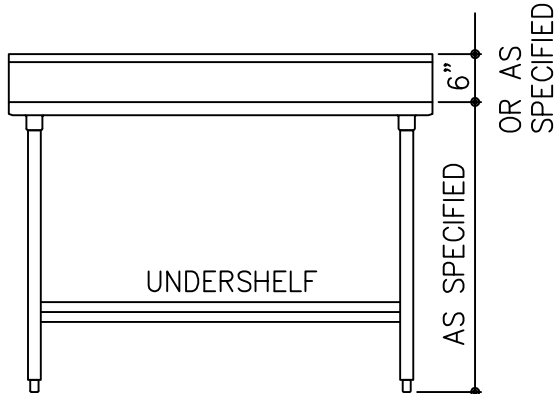
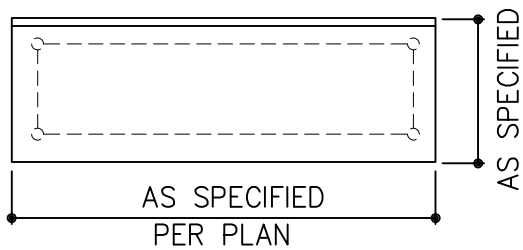
SECTION 2
 STANDARD DETAIL - 3.04
 FOR STATES THAT REQUIRE "LOW LEAD" FAUCETS, PROVIDE
 FAUCETS TO MEET CALIFORNIA AB1953 CERTIFICATION.



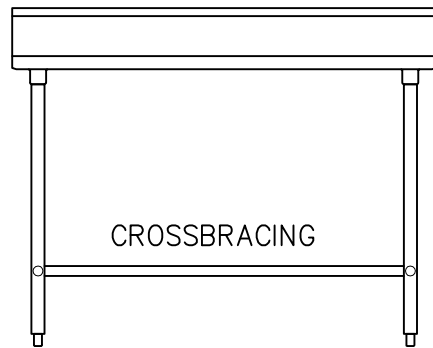
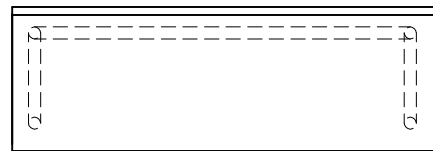
"A" ISLAND TABLE-UNDERSHELF



"B" ISLAND TABLE-CROSSBRACING



"C" TABLE W/SPLASH-UNDERSHELF



"D" TABLE W/ SPLASH-CROSSBRACING

APPROVED: 05-13-13



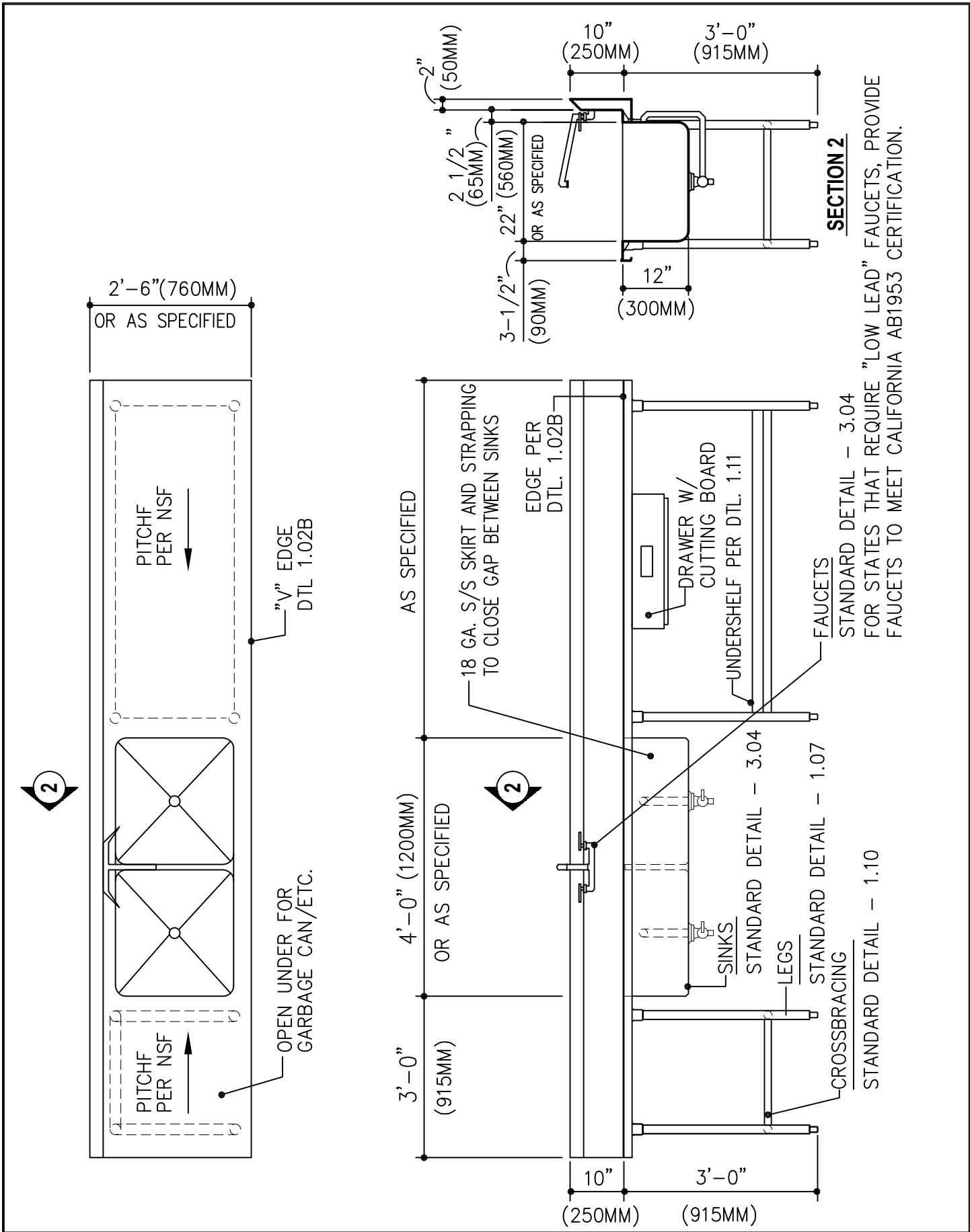
WORK TABLES - TYPE

NO SCALE

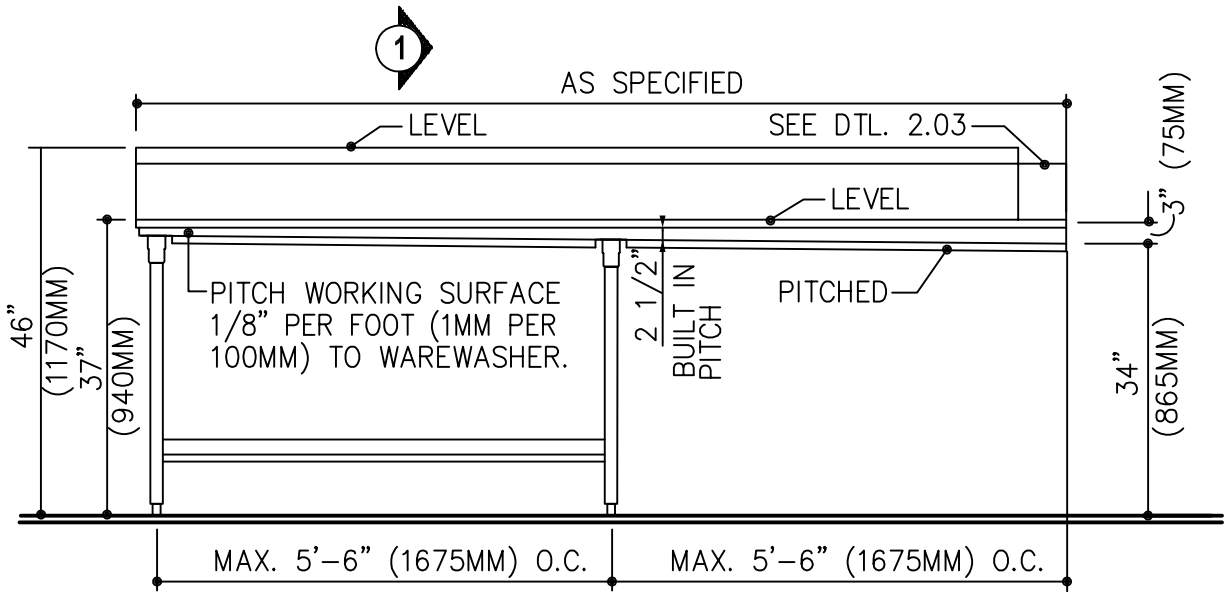
SEE ALSO 1.02, 1.05, 1.07, 1.10, 1.11

STANDARD DETAIL

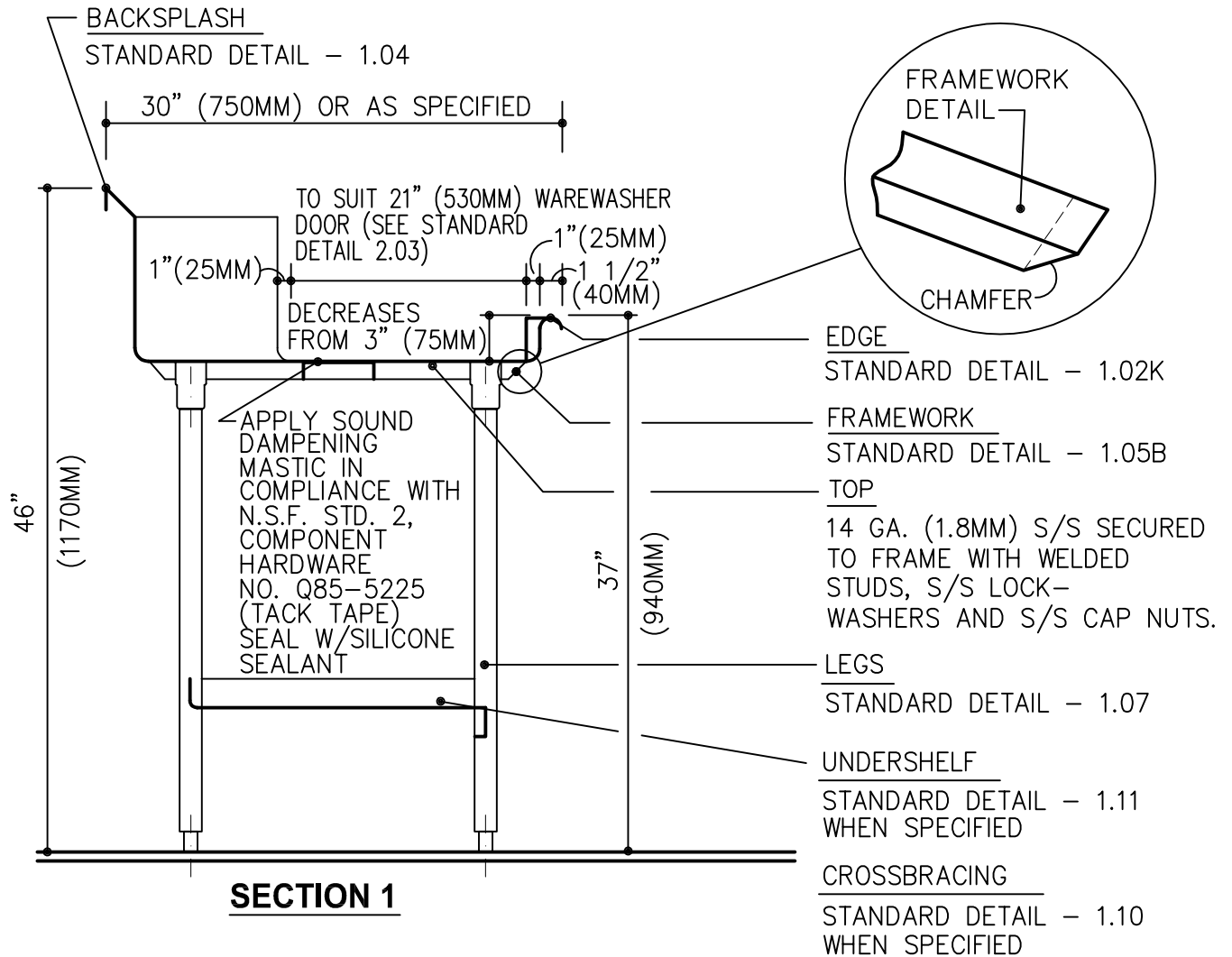
2.01.1



SECTION 2
 STANDARD DETAIL - 3.04
 FOR STATES THAT REQUIRE "LOW LEAD" FAUCETS, PROVIDE
 FAUCETS TO MEET CALIFORNIA AB1953 CERTIFICATION.



FRONT ELEVATION



APPROVED: 05-13-13



DISHTABLE

NO SCALE SEE ALSO 1.02K, 1.04, 1.05A, 1.05B, 1.07, 1.10, 1.11, 2.03

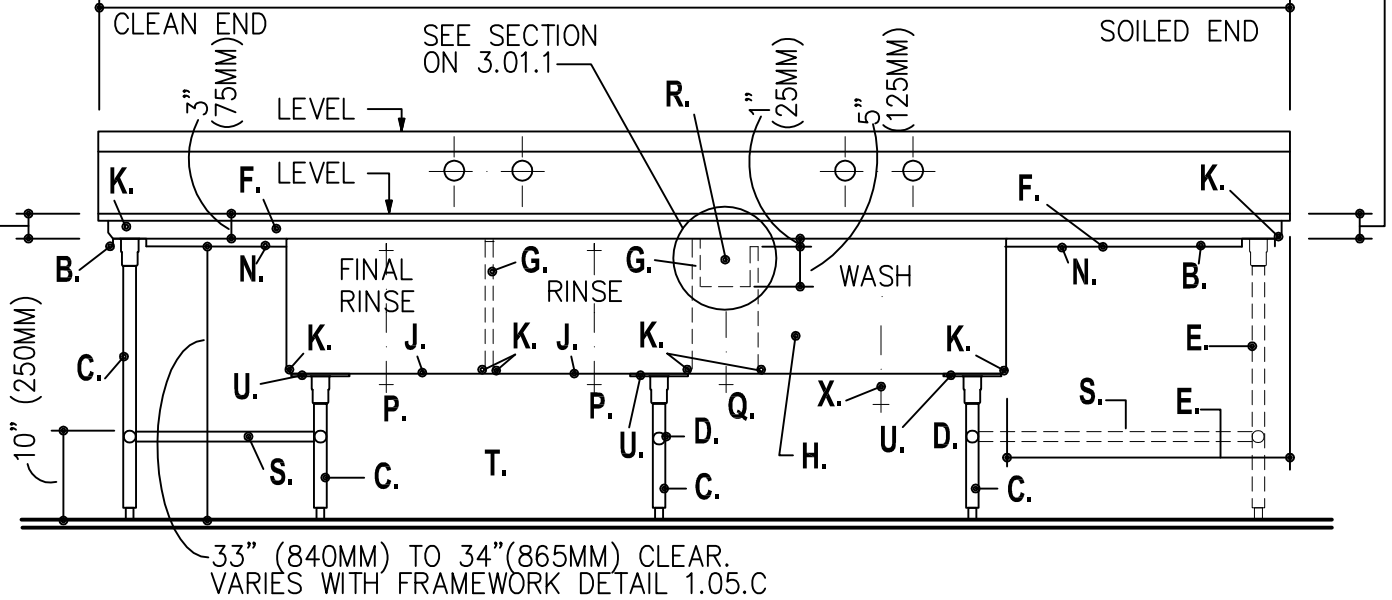
STANDARD DETAIL

2.02

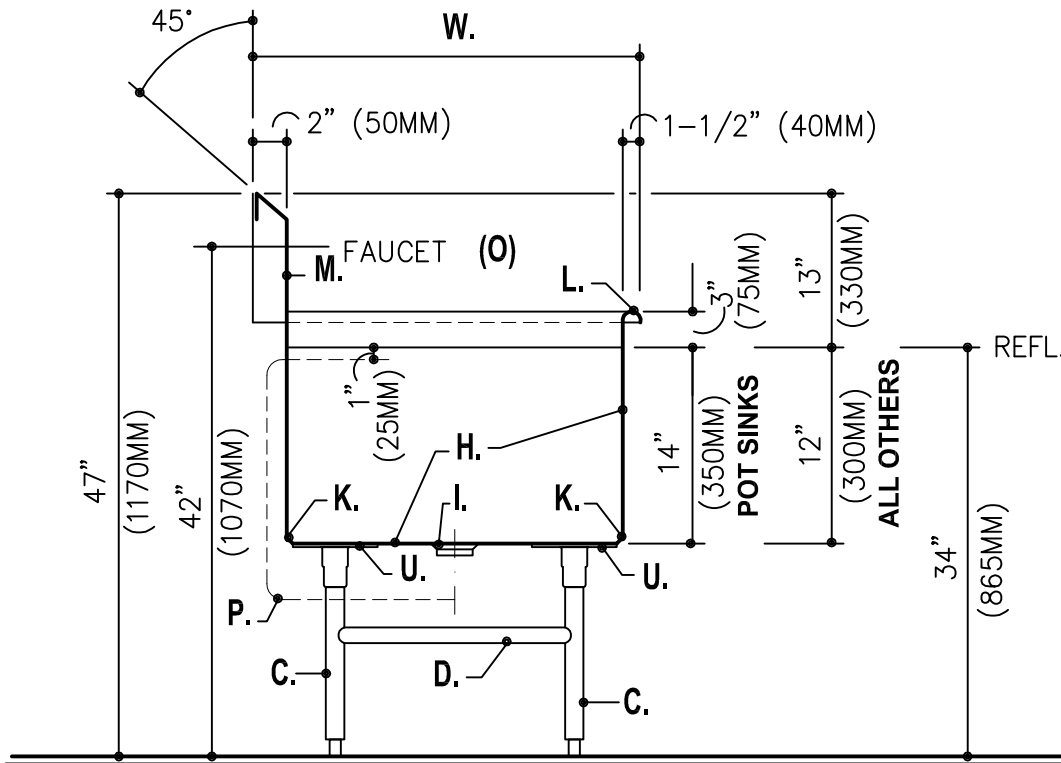
2-1/2" (65MM) MIN. DRAINBOARD
TO HAVE BUILT-IN PITCH TO THE
SINKS-SEE NOTE "F"

2-1/2" (65MM) MIN. DRAINBOARD
TO HAVE BUILT-IN PITCH TO THE
SINKS-SEE NOTE "F"

AS SPECIFIED



ELEVATION



TYPICAL SECTION

- A. MATERIAL - 14 GA. (1.8MM) S/S.
- B. STANDARD DETAIL - 1.05B.
- C. STANDARD DETAIL - 1.07
- D. STANDARD DETAIL - 1.10

APPROVED: 05-13-13



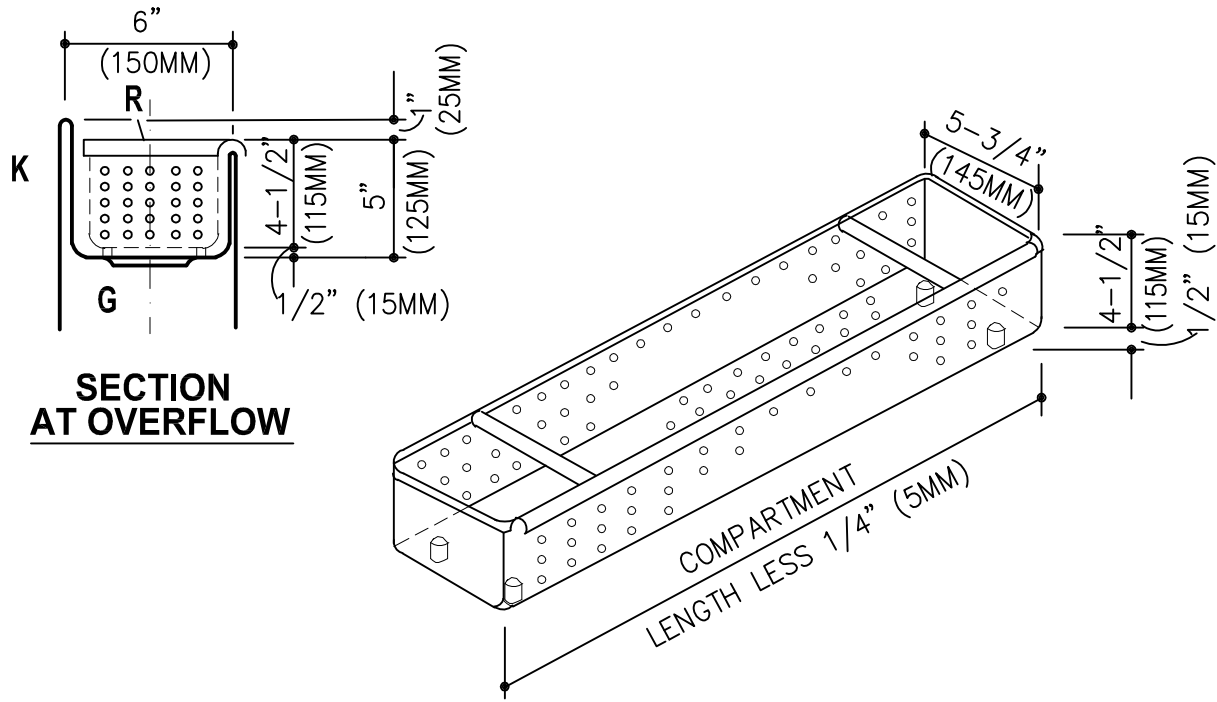
POT SINKS AND DRAINBOARDS

NO SCALE

CONTINUED ON 3.01.1
SEE ALSO: 1.05B, 1.07, 1.10

STANDARD DETAIL

3.01



**SECTION
AT OVERFLOW**

OVERFLOW COMPARTMENT AND BASKET

- E. DRAINBOARDS UP TO 24" (600MM) IN LENGTH REQUIRE NO LEGS. DRAIN BOARDS OVER 30" (750MM) REQUIRE 1" (25MM) O.D. 16 GA. (1.5MM) S/S LEGS AND CHANNEL FRAMEWORK
- F. DRAINBOARDS SHALL PITCH TO SINK 1/8" (3MM) PER FOOT OF LENGTH TO PROVIDE COMPLETE DRAINING WITHOUT POOLING. THE 3" (75MM) HIGH RAISED ROLLED RIM AT THE SINK SHALL DECREASE IN HEIGHT TOWARD THE OUTER ENDS OF THE DRAINBOARD.
- G. PARTITIONS BETWEEN COMPARTMENTS TO BE DOUBLE WALLED CONSTRUCTION.
- H. 18 GA. S/S SKIRT AND STRAPPING TO CLOSE GAP BETWEEN SINKS.
- I. WASTES SHALL BE SEATED IN DIE STAMPED DEPRESSIONS WITHOUT USE OF SOLDER, RIVETS OR WELDING. INSTALLED COMPONENTS SHALL BE FLUSH WITH SURROUNDING SURFACE.
- J. EACH SINK COMPARTMENT TO BE PITCHED AND CREASED TO WASTE TO ASSURE COMPLETE DRAINING WITHOUT POOLING.
- K. ENTIRE UNIT SHALL BE ALL WELDED COVE CORNERED CONSTRUCTION WITH VERTICAL AND HORIZONTAL AND INTERIOR CORNERS HAVING A 3/4" (20MM) RADIUS.
- L. STANDARD DETAIL- 1.02K EDGE.

APPROVED: 05-13-13



SINKS AND DRAINBOARDS

NO SCALE

CONTINUED ON 3.01.2
SEE ALSO: 1.02K, 3.01, 3.01.2

STANDARD DETAIL

3.01.1

- M. STANDARD DETAIL – 1.04A BACKSPLASH
- N. SOUND DAMPENING TO BE COMPONENT HARDWARE GROUP APPLIED TO TOP OF FRAMING PER DTL. 1.05, NOTE E.
- O. FAUCETS – T&S MODEL B-0290, (12" (304MM) NOZZLE) REMOVABLE MONEL SEATS, 3/4" (20MM) N.P.T. MALE INLETS. [B-0291:18" (457MM) NOZZLE]. (FOR SINKS WITH 15 GALLON CAPACITY (2.0 CUBIC FEET) OR LESS, MODEL B-0231 (12" (304MM) NOZZLE, 1/2" (15MM) MALE INLETS) OR B-0230 (18" (457MM) NOZZLE, 1/2" (15MM) MALE INLETS) ARE ACCEPTABLE.) NOZZLE TO BE SIZED SO THAT DISCHARGE END IS OVER DRAIN. FOR STATES THAT REQUIRE "LOW LEAD" FAUCETS, PROVIDE FAUCETS TO MEET CALIFORNIA AB1953 CERTIFICATION.
- P. WASTES – 2" (50MM) NICKEL PLATED BRONZE ROTARY HANDLE WASTE AND S/S STRAINER PLATE WITH NICKEL PLATED BRASS CONNECTED OVERFLOW, COMPONENT HARDWARE GROUP No. D50-7215
- Q. OVERFLOW WASTE – 1-1/2" (40MM) NICKEL PLATED BRASS OPEN DRAIN. EXTENDED THROUGH SINK BOTTOM USING GASKET AND FLANGE.
- R. OVERFLOW BASKET – 16 GA. (1.5MM) PERFORATED, 1/4" (6MM) HOLES, 3/4" (19MM) O.C. S/S COVED CORNERED WITH HEMMED EDGES, 1/2" (15MM) SOLID ROD FEET AND HANDLES.
- S. REAR CROSSBRACING ONLY.
- T. OMIT FRONT AND REAR LENGTHWISE CROSSBRACING UNDER SINKS.
- U. 14 GA. (1.8MM) S/S 6" X 6" (150MM X 150MM) SQUARE SUPPORT PLATE WELDED TO UNDERSIDE OF SINKS.
- W. WIDTH AS SPECIFIED.
- X. WASTE – 2" (50MM) NICKLE PLATED BRASS ROTARY HANDLE WASTE AND S/S STRAINER PLATE. COMPONENT HARDWARE No. D50-7200 WITHOUT OVERFLOW.

APPROVED: 05-13-13



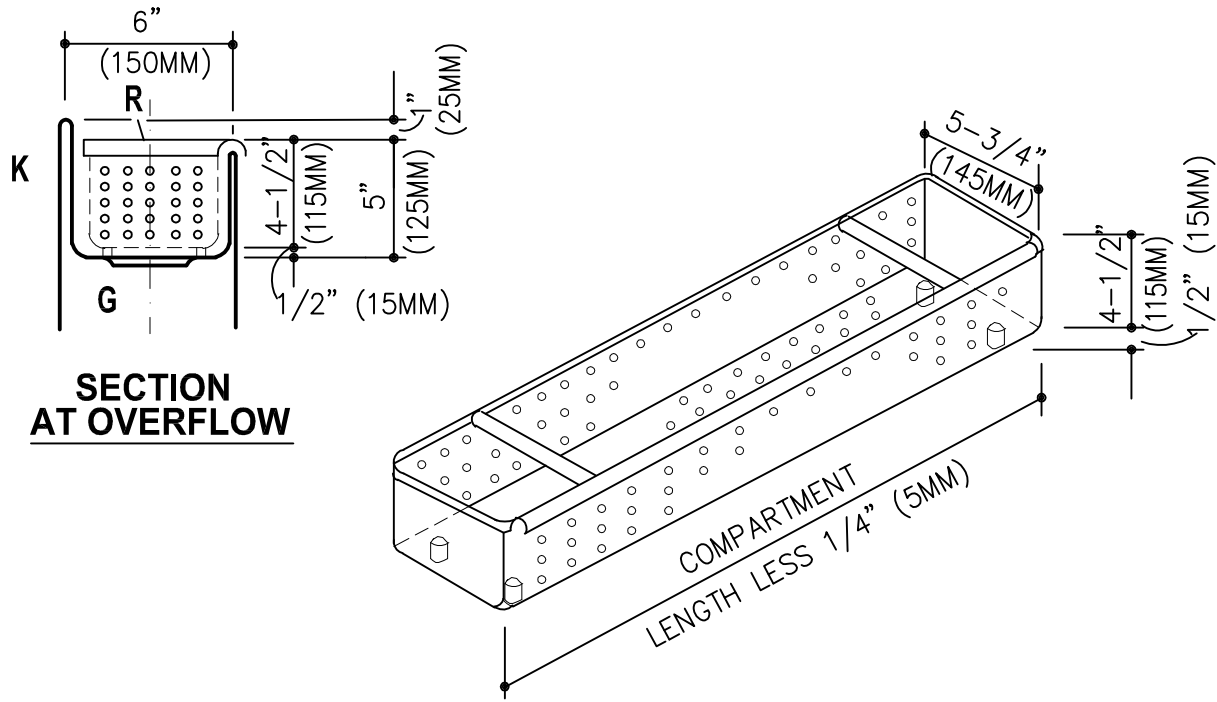
SINKS AND DRAINBOARDS

NO SCALE

SEE ALSO: 1.04A, 3.01, 3.01.1

STANDARD DETAIL

3.01.2



**SECTION
AT OVERFLOW**

OVERFLOW COMPARTMENT AND BASKET

- E. DRAINBOARDS UP TO 24" (600MM) IN LENGTH REQUIRE NO LEGS. DRAIN BOARDS OVER 30" (750MM) REQUIRE 1" (25MM) O.D. 16 GA. (1.5MM) S/S LEGS AND CHANNEL FRAMEWORK
- F. DRAINBOARDS SHALL PITCH TO SINK 1/8" (3MM) PER FOOT OF LENGTH TO PROVIDE COMPLETE DRAINING WITHOUT POOLING. THE 3" (75MM) HIGH RAISED ROLLED RIM AT THE SINK SHALL DECREASE IN HEIGHT TOWARD THE OUTER ENDS OF THE DRAINBOARD.
- G. PARTITIONS BETWEEN COMPARTMENTS TO BE DOUBLE WALLED CONSTRUCTION.
- H. 18 GA. S/S SKIRT AND STRAPPING TO CLOSE GAP BETWEEN SINKS.
- I. WASTES SHALL BE SEATED IN DIE STAMPED DEPRESSIONS WITHOUT USE OF SOLDER, RIVETS OR WELDING. INSTALLED COMPONENTS SHALL BE FLUSH WITH SURROUNDING SURFACE.
- J. EACH SINK COMPARTMENT TO BE PITCHED AND CREASED TO WASTE TO ASSURE COMPLETE DRAINING WITHOUT POOLING.
- K. ENTIRE UNIT SHALL BE ALL WELDED COVE CORNERED CONSTRUCTION WITH VERTICAL AND HORIZONTAL AND INTERIOR CORNERS HAVING A 3/4" (20MM) RADIUS.
- L. STANDARD DETAIL- 1.02K EDGE.

APPROVED: 05-13-13



SINKS AND DRAINBOARDS

NO SCALE

CONTINUED ON 3.01.2
SEE ALSO: 1.02K, 3.01, 3.01.2

STANDARD DETAIL

3.01.1

- M. STANDARD DETAIL – 1.04A BACKSPLASH
- N. SOUND DAMPENING TO BE COMPONENT HARDWARE GROUP APPLIED TO TOP OF FRAMING PER DTL. 1.05, NOTE E.
- O. FAUCETS – T&S MODEL B-0290, (12" (304MM) NOZZLE) REMOVABLE MONEL SEATS, 3/4" (20MM) N.P.T. MALE INLETS. [B-0291:18" (457MM) NOZZLE]. (FOR SINKS WITH 15 GALLON CAPACITY (2.0 CUBIC FEET) OR LESS, MODEL B-0231 (12" (304MM) NOZZLE, 1/2" (15MM) MALE INLETS) OR B-0230 (18" (457MM) NOZZLE, 1/2" (15MM) MALE INLETS) ARE ACCEPTABLE.) NOZZLE TO BE SIZED SO THAT DISCHARGE END IS OVER DRAIN. FOR STATES THAT REQUIRE "LOW LEAD" FAUCETS, PROVIDE FAUCETS TO MEET CALIFORNIA AB1953 CERTIFICATION.
- P. WASTES – 2" (50MM) NICKEL PLATED BRONZE ROTARY HANDLE WASTE AND S/S STRAINER PLATE WITH NICKEL PLATED BRASS CONNECTED OVERFLOW, COMPONENT HARDWARE GROUP No. D50-7215
- Q. OVERFLOW WASTE – 1-1/2" (40MM) NICKEL PLATED BRASS OPEN DRAIN. EXTENDED THROUGH SINK BOTTOM USING GASKET AND FLANGE.
- R. OVERFLOW BASKET – 16 GA. (1.5MM) PERFORATED, 1/4" (6MM) HOLES, 3/4" (19MM) O.C. S/S COVED CORNERED WITH HEMMED EDGES, 1/2" (15MM) SOLID ROD FEET AND HANDLES.
- S. REAR CROSSBRACING ONLY.
- T. OMIT FRONT AND REAR LENGTHWISE CROSSBRACING UNDER SINKS.
- U. 14 GA. (1.8MM) S/S 6" X 6" (150MM X 150MM) SQUARE SUPPORT PLATE WELDED TO UNDERSIDE OF SINKS.
- W. WIDTH AS SPECIFIED.
- X. WASTE – 2" (50MM) NICKLE PLATED BRASS ROTARY HANDLE WASTE AND S/S STRAINER PLATE. COMPONENT HARDWARE No. D50-7200 WITHOUT OVERFLOW.

APPROVED: 05-13-13



SINKS AND DRAINBOARDS

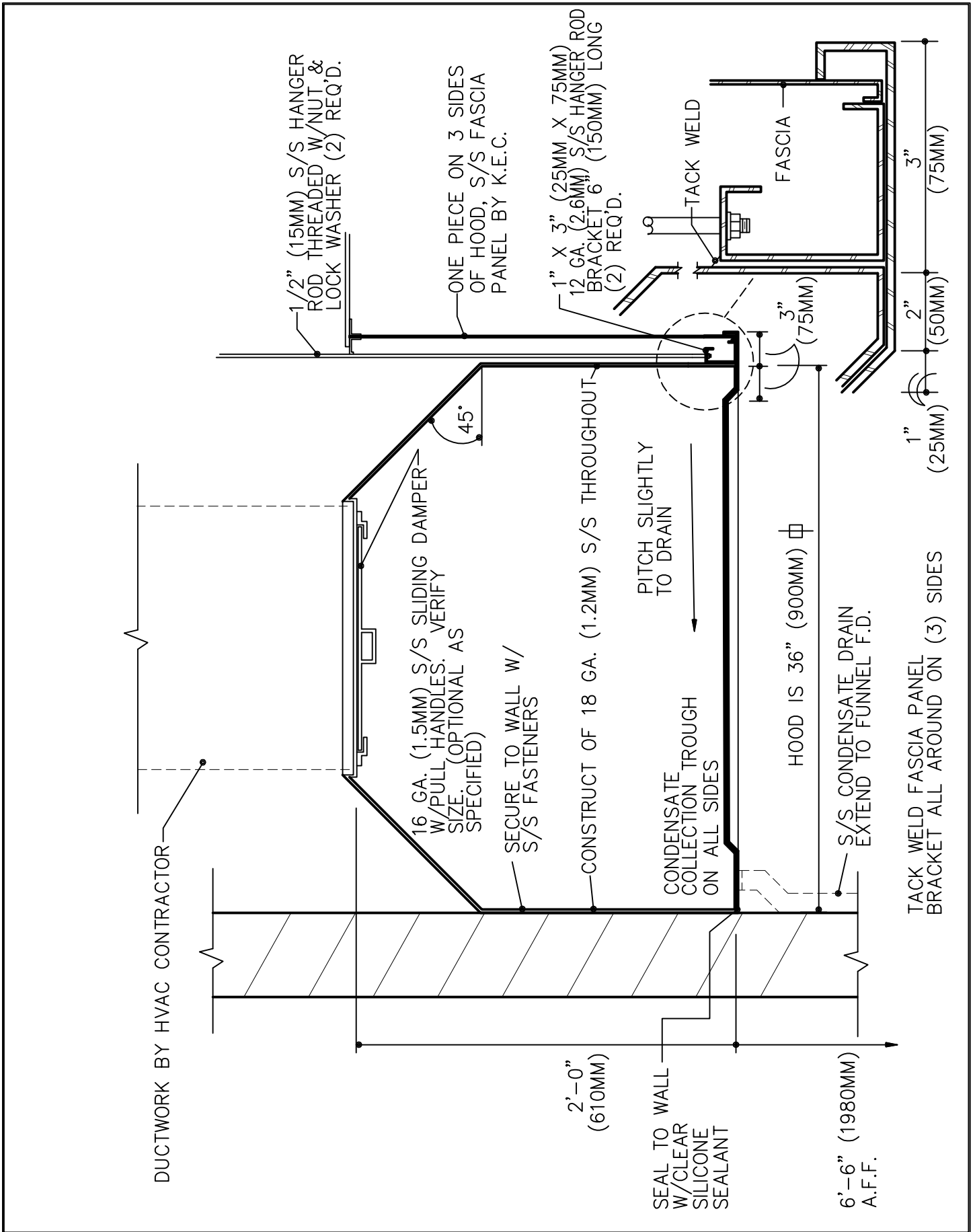
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SEE ALSO: 1.04A, 3.01, 3.01.1

STANDARD DETAIL

3.01.2

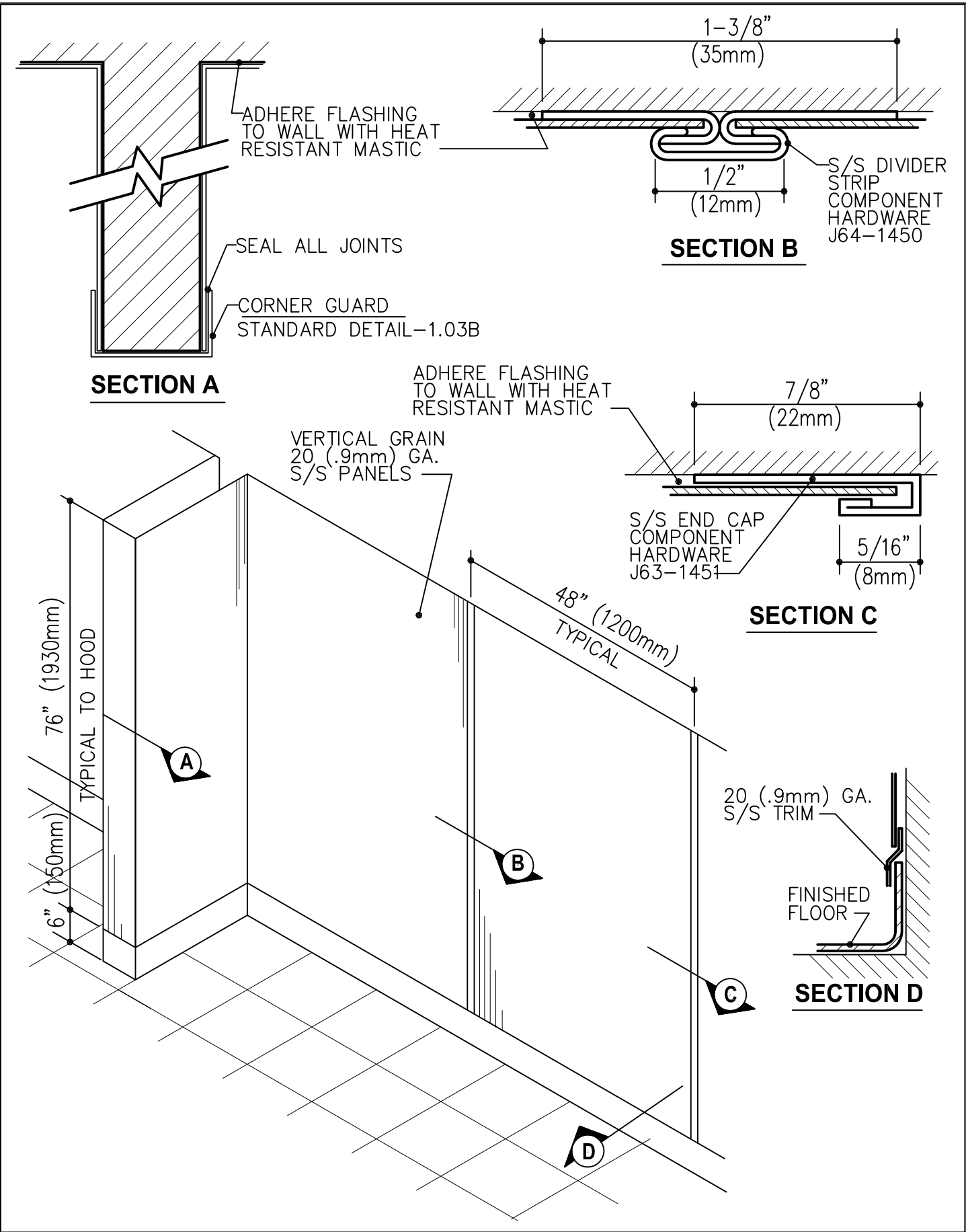
APPROVED: 11-01-02



CONDENSATE HOOD
NO SCALE

STANDARD DETAIL
5.07

APPROVED: 05-13-13



STAINLESS STEEL WALL SHEATHING
 NO SCALE
 SEE ALSO: 1.03B

STANDARD DETAIL
8.02

SECTION 22 05 00 - COMMON WORK RESULTS FOR PLUMBING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Identification for Plumbing Piping and Equipment.
 - 2. Sleeves.
 - 3. Mechanical sleeve seals.
 - 4. Formed steel channel.
 - 5. Firestopping relating to plumbing work.
 - 6. Firestopping accessories.

1.2 SYSTEM DESCRIPTION

- A. Firestopping: Conform to applicable code for fire resistance ratings and surface burning characteristics.

1.3 SUBMITTALS

- A. Shop Drawings: Submit for piping and equipment identification list of wording, symbols, letter size, and color coding for pipe identification and valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
- B. Product Data for Pipe and Equipment Identification: Submit for mechanical identification manufacturers catalog literature for each product required.

PART 2 PRODUCTS

2.1 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

- A. Plastic Nameplates: Laminated three-layer plastic with engraved black letters on light background color.
- B. Plastic Tags: Laminated three-layer plastic with engraved black letters on light background color, minimum 1-1/2 inches diameter.
- C. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener. Color and Lettering: Conform to ASME A13.1.
- D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings. Color and Lettering: Conform to ASME A13.1.
- E. Plastic Underground Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.2 SLEEVES

- A. Sleeves for Pipes Through Non-fire Rated Floors: 18 gage thick galvanized steel.
- B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.
- C. Sealant: Acrylic.

2.3 MECHANICAL SLEEVE SEALS

- A. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

2.4 FORMED STEEL CHANNEL

- A. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

2.5 FIRESTOPPING

- A. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
 - 1. Silicone Firestopping Elastomeric Firestopping: Single or Multiple component silicone elastomeric compound and compatible silicone sealant.
 - 2. Foam Firestopping Compounds: Single or Multiple component foam compound.
 - 3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
 - 4. Fiber Stuffing and Sealant Firestopping: Composite of mineral or ceramic fiber stuffing insulation with silicone elastomer for smoke stopping.
 - 5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
 - 6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.
 - 7. Firestop Pillows: Formed mineral fiber pillows.

2.6 FIRESTOPPING ACCESSORIES

- A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.
- B. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify openings are ready to receive sleeves.

3.2 INSTALLATION - PIPING AND EQUIPMENT IDENTIFICATION

- A. Install plastic nameplates with adhesive.
- B. Install plastic tags with corrosion resistant metal chain.

3.3 INSTALLATION - SLEEVES

- A. Exterior watertight entries: Seal with mechanical sleeve seals.
- B. Set sleeves in position in forms. Provide reinforcing around sleeves.
- C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- D. Extend sleeves through floors **1 inch** above finished floor level. Caulk sleeves.
- E. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with firestopping insulation and caulk. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- F. Install chrome plated steel or stainless steel escutcheons at finished surfaces.

3.4 INSTALLATION - FIRESTOPPING

- A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.

END OF SECTION

SECTION 22 05 03 - PIPES AND TUBES FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Pipe and pipe fittings for following systems:
 - 1. Domestic water piping within 5 feet of building.
 - 2. Sanitary sewer piping within 5 feet of building.
 - 3. Equipment drains and over flows.
 - 4. Underground pipe markers.

1.2 SUBMITTALS

- A. Shop Drawings: Indicate layout of piping systems, including equipment, critical dimensions, and sizes.
- B. Product Data: Pipe materials and fittings; manufacturer's catalog information.
- C. Design Data: Indicate pipe sizes and sizing methods. Indicate calculations used.

1.3 QUALITY ASSURANCE

- A. Perform Work according to ASME B31.9 code for installation of piping systems, and ASME Section IX for welding materials and procedures.

PART 2 PRODUCTS

2.1 DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET OF BUILDING

- A. Copper Tubing: ASTM B88 Type K, annealed.
 - 1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
 - 2. Joints: Compression connection or Brazed, AWS A5.8 BCuP silver/phosphorus/copper alloy with melting range 1190 to 1480 degrees F.

2.2 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Tubing: ASTM B88, Type L drawn.
 - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
- B. Copper Tubing: ASTM B88 Type L drawn, rolled grooved ends.
 - 1. Fittings: grooved ends.
 - 2. Joints: Grooved mechanical couplings meeting ASTM F1476.
 - a. Housing Clamps: ASTM A395/A395M and ASTM A536 ductile iron, enamel coated, compatible with copper tubing sizes, to engage and lock designed to permit some angular deflection, contraction, and expansion.

- b. Gasket: Elastomer composition for operating temperature range from minus 30 degrees F to 230 degrees F.
- c. Accessories: Steel bolts, nuts, and washers.

2.3 SANITARY SEWER PIPING, BURIED WITHIN 5 FEET OF BUILDING

- A. Cast Iron Soil Pipe: ASTM A74, service weight.
 - 1. Fittings: Cast iron, ASTM A74.
 - 2. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene gaskets or lead and oakum.
- B. Cast Iron Pipe: CISPI 301, hubless.
 - 1. Fittings: Cast iron, CISPI 301.
 - 2. Joints: CISPI 310, neoprene gasket and stainless steel clamp and shield assemblies.

2.4 SANITARY SEWER PIPING, ABOVE GRADE

- A. Cast Iron Pipe: ASTM A74, service weight.
 - 1. Fittings: Cast iron, ASTM A74.
 - 2. Joints: ASTM C564, rubber gasket joint devices or lead and oakum.
- B. Cast Iron Pipe: CISPI 301, hubless, service weight.
 - 1. Fittings: Cast iron, CISPI 301.
 - 2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.

2.5 EQUIPMENT DRAINS AND OVERFLOWS

- A. Copper Tubing: ASTM B88 Type L drawn.
 - 1. Fittings: ASME B16.18, cast brass, or ASME B16.22 solder wrought copper.
 - 2. Joints: ASTM B32, Alloy Grade Sb5 tin-antimony, or Alloy Grade Sn95 tin-silver, lead-free solder.

2.6 UNIONS AND FLANGES

- A. Unions for Pipe 2 inches and Smaller:
 - 1. Ferrous Piping: malleable iron, threaded.
 - 2. Copper Piping: Class 150, bronze unions.
 - 3. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.
- B. Flanges for Pipe 2-1/2 inches and Larger:
 - 1. Ferrous Piping: forged steel, slip-on flanges.
 - 2. Copper Piping: Class 150, slip-on bronze flanges.
 - 3. Gaskets: 1/16 inch thick preformed neoprene gaskets.

2.7 UNDERGROUND PIPE MARKERS

- A. Plastic Ribbon Tape: Bright colored, continuously printed, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

PART 3 EXECUTION

3.1 PREPARATION

- A. Ream pipe and tube ends. Remove burrs.
- B. Prepare piping connections to equipment with flanges or unions.

3.2 INSTALLATION - BURIED PIPING SYSTEMS

- A. Install pipe on prepared bedding.
- B. Route pipe in straight line.
- C. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- D. Pipe Cover and Backfilling:
 - 1. Backfill trench.
 - 2. Evenly and continuously backfill remaining trench depth in uniform layers with backfill material.
 - 3. Do not use wheeled or tracked vehicles for tamping.

3.3 INSTALLATION - ABOVE GROUND PIPING

- A. Group piping whenever practical at common elevations.
- B. Sleeve pipe passing through partitions, walls and floors. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- C. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- D. Provide access where valves and fittings are not accessible.
- E. Install non-conducting dielectric connections wherever jointing dissimilar metals.
- F. Establish invert elevations, slopes for drainage.
- G. Slope piping and arrange systems to drain at low points.
- H. Protect piping systems from entry of foreign materials by temporary covers, completing sections of Work, and isolating parts of completed system.
- I. Install piping penetrating roofed areas to maintain integrity of roof assembly.

3.4 INSTALLATION - DOMESTIC WATER PIPING SYSTEMS

- A. Install domestic water piping system according to ASME B31.9.

3.5 INSTALLATION - SANITARY WASTE AND VENT PIPING SYSTEMS

- A. Install sanitary waste and vent piping systems according to ASME B31.9.
- B. Install bell and spigot pipe with bell end upstream.
- C. Support cast iron drainage piping at every joint.

3.6 FIELD QUALITY CONTROL

- A. Test domestic water piping system.
- B. Test sanitary waste and vent piping system.

3.7 CLEANING

- A. Clean and disinfect domestic water distribution system.

END OF SECTION

SECTION 22 05 23 - GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Gate valves.
 - 2. Ball valves.
 - 3. Plug valves.
 - 4. Butterfly valves.
 - 5. Check valves.

1.2 SUBMITTALS

- A. Product Data: Manufacturer's catalog information with valve data and ratings for each service.
- B. Manufacturer's Installation Instructions: Hanging and support methods, joining procedures.
- C. Manufacturer's Certificate: Products meet or exceed specified requirements.

1.3 QUALITY ASSURANCE

- A. For drinking water service, provide valves complying with NSF 61.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Provide temporary protective coating on cast iron and steel valves.

1.5 WARRANTY

- A. Furnish five year manufacturer warranty for valves excluding packing.

PART 2 PRODUCTS

2.1 GATE VALVES

- A. [GA-1] 2 inches and Smaller: MSS SP 80, bronze body, bronze trim.
- B. [GA-2] 2-1/2 inches and Larger: MSS SP 70, cast iron body, bronze trim, bolted bonnet, hand-wheel, outside screw and yoke, solid wedge disc with bronze seat rings, flanged ends.

2.2 BALL VALVES

- A. [BA-1] 2 inches and Smaller: MSS SP 110, piece bronze body, chrome plated brass ball.
- B. [BA-2] 2 inches and Smaller: MSS SP 110, bronze, two piece body.

- C. [BA-3] 2 inches and Smaller: MSS SP 110, bronze, three piece body,
- D. [BA-5] 2 inches and Smaller: MSS SP 110, Stainless steel, stainless steel ball.

2.3 PLUG VALVES

- A. [PL-1] 2 inches and Smaller: MSS SP 78, pressure lubricated, teflon packing, threaded ends. Furnish one plug valve wrench for every ten plug-valves with minimum of one wrench.
- B. [PL-2] 2-1/2 inches and Larger: MSS SP 78, pressure lubricated, teflon packing, flanged ends. Furnish wrench-operated.

2.4 BUTTERFLY VALVES

- A. [BF-1] 2-1/2 inches and Larger: MSS SP 67.
 - 1. Body: Cast or ductile iron, stainless steel stem, extended neck.

2.5 CHECK VALVES

- A. Horizontal Swing Check Valves:
 - 1. [CK-1] 2 inches and Smaller: MSS SP 80, bronze body and cap, bronze seat.
 - 2. [CK-2] 2-1/2 inches and Larger: MSS SP 71, cast iron body, bolted cap, bronze or cast iron disc, flanged ends.
 - 3. [CK-3] 2-1/2 inches and Larger: MSS SP 71, cast iron body, bronze swing disc.
- B. Spring Loaded Check Valves:
 - 1. [CK-6] 2 inches and Smaller: MSS SP 80, bronze body, in-line spring lift check, silent closing, integral seat ends.
 - 2. [CK-7] 2-1/2 inches and Larger: MSS SP 71, cast iron body, bronze seat, center guided bronze disc, stainless steel spring and screws, flanged ends.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install valves with stems upright or horizontal, not inverted.
- B. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
- C. Install 3/4 inch gate or ball valves with cap for drains at main shut-off valves, low points of piping, bases of vertical risers, and at equipment.
- D. Install valves with clearance for installation of insulation and allowing access.
- E. Provide access where valves and fittings are not accessible.

END OF SECTION

SECTION 22 05 29 - HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe hangers and supports.
 - 2. Hanger rods.
 - 3. Inserts.
 - 4. Flashing.
 - 5. Sleeves.
 - 6. Mechanical sleeve seals.
 - 7. Formed steel channel.
 - 8. Firestopping relating to plumbing work.
 - 9. Firestopping accessories.

1.2 DEFINITIONS

1.3 SYSTEM DESCRIPTION

- A. Firestopping Materials: to achieve fire ratings as noted on Drawings for adjacent construction, but not less than 1 hour fire rating.
- B. Firestop interruptions to fire rated assemblies, materials, and components.
- C. Firestopping: Conform to applicable code for fire resistance ratings and surface burning characteristics.

1.4 SUBMITTALS

- A. Shop Drawings: Indicate system layout with location including critical dimensions, sizes, pipe hanger and support locations, and detail of trapeze hangers.
- B. Product Data:
 - 1. Hangers and Supports: Manufacturers catalog data including load capacity.
 - 2. Firestopping: Data on product characteristics, performance and limitation criteria.
- C. Firestopping Schedule: Schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance rating of adjacent assembly.
- D. Design Data: Indicate load-carrying capacity of trapeze, multiple pipe, and riser support hangers. Indicate calculations used to determine load carrying capacity of trapeze, multiple pipe, and riser support hangers. Manufacturer's Installation Instructions:
 - 1. Hangers and Supports: Submit special procedures and assembly of components.
 - 2. Firestopping: Submit preparation and installation instructions.
- E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

- F. Firestopping Engineering Judgments: For conditions not covered by UL or WH listed designs, submit judgments by licensed professional engineer suitable for presentation to authority having jurisdiction for acceptance as meeting code fire protection requirements.

1.5 QUALITY ASSURANCE

- A. Through-Penetration Firestopping of Fire-Rated Assemblies: ASTM E814 with 0.10 inch water gage minimum positive pressure differential to achieve fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.
 - 1. Wall Penetrations: Fire F-Ratings as indicated on Drawings, but not less than 1-hour.
 - 2. Floor Penetrations: Fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.
 - a. Floor Penetrations Within Wall Cavities: T-Rating not required.
- B. Through-Penetration Firestopping of Non-Fire-Rated Floor and roof Assemblies: Materials to resist free passage of flame and products of combustion.
 - 1. Noncombustible Penetrating Items: Noncombustible materials for penetrating items connecting maximum of three stories.
 - 2. Penetrating Items: Materials approved by authorities having jurisdiction for penetrating items connecting maximum of two stories.
- C. Fire-Resistant Joints in Fire-Rated Floor, Roof, and Wall Assemblies: UL 2079 to achieve fire resistant rating as indicated on Drawings for assembly in which joint is installed.
- D. Fire-Resistant Joints Between Floor Slabs and Exterior Walls: ASTM E119 with 0.10 inch water gage minimum positive pressure differential to achieve fire resistant rating as indicated on Drawings for floor assembly.
- E. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested according to ASTM E84.
- F. Perform Work according to AWS D1.1 for welding hanger and support attachments to building structure.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply firestopping materials when temperature of substrate material and ambient air is below 60 degrees F.
- B. Maintain this minimum temperature before, during, and for minimum three days after installation of firestopping materials.

1.7 WARRANTY

- A. Furnish five year manufacturer warranty for pipe hangers and supports.

PART 2 PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

A. Plumbing Piping - DWV:

1. Conform to ASME B31.9, ASTM F708, MSS SP58, MSS SP69, MSS SP89.
2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
3. Hangers for Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.
4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
5. Wall Support for Pipe Sizes 3 inches and Smaller: Cast iron hook.
6. Wall Support for Pipe Sizes 4 inches and Larger: Welded steel bracket and wrought steel clamp.
7. Vertical Support: Steel riser clamp.
8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
9. Copper Pipe Support: Copper-plated, carbon-steel adjustable, ring.

B. Plumbing Piping - Water:

1. Conform to ASME B31.9, ASTM F708, MSS SP58, MSS SP69, MSS SP89.
2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
3. Hangers for Cold Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.
4. Hangers for Hot Pipe Sizes 2 to 4 inches: Carbon steel, adjustable, clevis.
5. Hangers for Hot Pipe Sizes 6 inches and Larger: Adjustable steel yoke, cast iron roll, double hanger.
6. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
7. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 inches and Larger: Steel channels with welded spacers and hanger rods, cast iron roll.
8. Wall Support for Pipe Sizes 3 inches and Smaller: Cast iron hook.
9. Wall Support for Pipe Sizes 4 inches and Larger: Welded steel bracket and wrought steel clamp.
10. Wall Support for Hot Pipe Sizes 6 inches and Larger: Welded steel bracket and wrought steel clamp with adjustable steel yoke and cast iron roll.
11. Vertical Support: Steel riser clamp.
12. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
13. Floor Support for Hot Pipe Sizes 4 inches and Smaller: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
14. Floor Support for Hot Pipe Sizes 6 inches and Larger: Adjustable cast iron roll and stand, steel screws, and concrete pier or steel support.
15. Copper Pipe Support: Copper-plated, Carbon-steel ring.

2.2 ACCESSORIES

- #### A. Hanger Rods: Mild steel threaded both ends, threaded on one end, or continuous threaded.

2.3 INSERTS

- A. Inserts: Malleable iron case of steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

2.4 FLASHING

- A. Metal Flashing: 26 thick galvanized steel.
- B. Metal Counterflashing: 22 gage thick galvanized steel.

2.5 SLEEVES

- A. Sleeves for Pipes Through Non-Fire-Rated Floors: 18 gage thick galvanized steel.
- B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.
- C. Sealant: Acrylic.

2.6 MECHANICAL SLEEVE SEALS

- A. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

2.7 FORMED STEEL CHANNEL

- A. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

2.8 FIRESTOPPING

- A. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
 1. Silicone Firestopping Elastomeric Firestopping: Single or Multiple component silicone elastomeric compound and compatible silicone sealant.
 2. Foam Firestopping Compounds: Single or Multiple component foam compound.
 3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
 4. Fiber Stuffing and Sealant Firestopping: Composite of mineral or ceramic fiber stuffing insulation with silicone elastomer for smoke stopping.
 5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
 6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.
 7. Firestop Pillows: Formed mineral fiber pillows.

2.9 FIRESTOPPING ACCESSORIES

- A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.
- B. Dam Material: Permanent:
- C. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.
- D. General:
 - 1. Furnish UL-listed products.
 - 2. Select products with rating not less than rating of wall or floor being penetrated.
- E. Non-Rated Surfaces:
 - 1. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where piping is exposed.
 - 2. For exterior wall openings below grade, furnish mechanical sealing device to continuously fill annular space between piping and cored opening or waterstop type wall sleeve.

PART 3 EXECUTION

3.1 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.
- B. Remove incompatible materials affecting bond.
- C. Do not drill or cut structural members.

3.2 INSTALLATION

- A. Inserts:
 - 1. Install inserts for placement in concrete forms.
 - 2. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
 - 3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe 4 inches and larger.
 - 4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
 - 5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut.
- B. Support horizontal piping as scheduled.
- C. Install hangers with minimum **1/2 inch** space between finished covering and adjacent work.
- D. Place hangers within **12 inches** of each horizontal elbow.

- E. Use hangers with **1-1/2 inch** minimum vertical adjustment.
- F. Support horizontal cast iron pipe adjacent to each hub, with **5 feet** maximum spacing between hangers.
- G. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub.
- H. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.
- I. Support riser piping independently of connected horizontal piping.
- J. Provide copper plated hangers and supports for copper piping.
- K. Design hangers for pipe movement without disengagement of supported pipe.
- L. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
- M. Provide clearance in hangers and from structure and other equipment for installation of insulation.
- N. Equipment Bases and Supports:
 1. Provide housekeeping pads of concrete, minimum 3-1/2 inches thick and extending 6 inches beyond supported equipment.
 2. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.
- O. Flashing:
 1. Provide flexible flashing and metal counterflashing where piping penetrates weather or waterproofed walls, floors, and roofs.
 2. Flash vent and soil pipes projecting 3 inches minimum above finished roof surface with lead worked 1 inch minimum into hub, 8 inches minimum clear on sides with 24 x 24 inches sheet size. For pipes through outside walls, turn flanges back into wall and caulk, metal counter-flash, and seal.
 3. Flash floor drains in floors with topping over finished areas with lead, 10 inches clear on sides with minimum 36 x 36 inch sheet size. Fasten flashing to drain clamp device.
 4. Seal drains watertight to adjacent materials.
 5. Adjust storm collars tight to pipe with bolts; caulk around top edge. Use storm collars above roof jacks. Screw vertical flange section to face of curb.
- P. Sleeves:
 1. Exterior watertight entries: Seal with mechanical sleeve seals.
 2. Set sleeves in position in forms. Provide reinforcing around sleeves.
 3. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
 4. Extend sleeves through floors 1 inch above finished floor level; caulk sleeves.
- Q. Where piping penetrates floor, ceiling, or wall, close off space between pipe and adjacent work with firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

- R. Install chrome-plated steel or stainless steel escutcheons at finished surfaces.
- S. Firestopping:
1. Install material at fire-rated construction perimeters and openings containing penetrating sleeves, piping and other items requiring firestopping.
 2. Apply primer where recommended by manufacturer for type of firestopping material and substrate involved, and as required for compliance with required fire ratings.
 3. Apply firestopping material in sufficient thickness to achieve required fire and smoke rating to uniform density and texture.
 4. Fire-Rated Surface:
 - a. Seal opening as follows:
 - 1) Install sleeve through opening and extending beyond minimum of 1 inch on both sides of building element.
 - 2) Size sleeve allowing minimum of 1 inch void between sleeve and building element.
 - 3) Pack void with backing material.
 - 4) Seal ends of sleeve with UL listed fire resistive silicone compound to meet fire rating of structure penetrated.
 5. Non-Rated Surfaces:
 - a. Seal opening through non-fire rated as follows:
 - 1) Install sleeve through opening and extending beyond minimum of 1 inch on both sides of building element.
 - 2) Size sleeve allowing minimum of 1 inch void between sleeve and building element.
 - 3) Install type of firestopping material recommended by manufacturer.
 - b. Install escutcheons, floor plates or ceiling plates where conduit, penetrates non-fire rated surfaces in occupied spaces. Occupied spaces include rooms with finished ceilings and where penetration occurs below finished ceiling.
 - c. Exterior wall openings below grade: Assemble rubber links of mechanical sealing device to size of piping and tighten in place, according to manufacturer's instructions.

3.3 SCHEDULES

PIPE HANGER SPACING		
PIPE MATERIAL	MAXIMUM HANGER SPACING	HANGER ROD DIAMETER
	Feet (m)	Inches (mm)
ABS (All sizes)	4 (1.2)	3/8 (9)
Aluminum (All sizes)	10 (3)	1/2 (13)
Brass		
Cast Iron (All Sizes)	5 (1.5)	5/8 (15)
Cast Iron (All Sizes) with 10 foot (3 m) length of pipe	10 (3)	5/8 (15)
CPVC, 1 inch (25 mm) and smaller	3 (0.9)	1/2 (13)
CPVC, 1-1/4 inches (32 mm) and larger	4 (1.2)	1/2 (13)
Copper Tube, 1-1/4 inches (32 mm) and smaller	6 (1.8)	1/2 (13)
Copper Tube, 1-1/2 inches (38 mm) and larger	10 (3)	1/2 (13)

Fiberglass	4 (1.2)	1/2 (13)
Glass	8 (2.4)	1/2 (13)
Polybutylene	2.67 (0.8)	3/8 (9)
Polypropylene	4 (1.2)	3/8 (9)
PVC (All Sizes)	4 (1.2)	3/8 (9)
Steel, 3 inches (75 mm) and smaller	12 (3.7)	1/2 (13)
Steel, 4 inches (100 mm) and larger	12 (3.7)	5/8 (15)

END OF SECTION

SECTION 22 05 53 - IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Nameplates.
 - 2. Tags.
 - 3. Pipe markers.
 - 4. Lockout devices.

1.2 SUBMITTALS

- A. Product Data: Manufacturers catalog literature for each product required.
- B. Shop Drawings: List of wording, symbols, letter size, and color coding for mechanical identification and valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
- C. Manufacturer's Installation Instructions: Special procedures and installation.
- D. Manufacturer's Certificate: Products meet or exceed specified requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of tagged valves; include valve tag numbers.

1.4 QUALITY ASSURANCE

- A. Conform to NFPA 99 requirements for labeling and identification of medical gas piping systems and accessories.
- B. Conform to ASME A13.1 for color scheme for identification of piping systems and accessories.

1.5 QUALIFICATIONS

- A. Installer: Company specializing in performing Work of this Section with three years' experience.

PART 2 PRODUCTS

2.1 NAMEPLATES

- A. Product Description: Laminated three-layer plastic with engraved black letters on light contrasting background color.

2.2 TAGS

- A. Plastic Tags:
 - 1. Laminated three-layer plastic with engraved black letters on light contrasting background color.
- B. Metal Tags:
 - 1. Brass with stamped letters.
- C. Information Tags:
 - 1. Clear plastic with printed "Danger," "Caution," or "Warning" and message; size 3-1/4 x 5-5/8 inches with grommet and self-locking nylon ties.
- D. Tag Chart: Typewritten letter size list of applied tags and location in anodized aluminum frame.

2.3 PIPE MARKERS

- A. Color and Lettering: Conform to ASME A13.1.
- B. Plastic Pipe Markers:
 - 1. Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener.
- C. Plastic Tape Pipe Markers:
 - 1. Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.
- D. Plastic Underground Pipe Markers:
 - 1. Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.4 LOCKOUT DEVICES

- A. Lockout Hasps:
 - 1. Anodized aluminum hasp with erasable label surface; size minimum 7-1/4 x 3 inches.
- B. Valve Lockout Devices:
 - 1. Steel device preventing access to valve operator, accepting lock shackle.

PART 3 EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

3.2 INSTALLATION

- A. Install identifying devices after completion of coverings and painting.
- B. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive.

- C. Install tags using corrosion-resistant chain. Number tags consecutively by location.
- D. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.
- E. Identify water heaters, pumps, tanks, and water treatment devices with plastic nameplates. Identify in-line pumps and other small devices with tags.
- F. Identify control panels and major control components outside panels with plastic nameplates.
- G. Identify valves in main and branch piping with tags.
- H. Identify piping, concealed or exposed, with plastic pipe markers. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.
- I. Provide ceiling tacks to locate valves above T-bar type panel ceilings. Locate in corner of panel closest to equipment.

END OF SECTION

SECTION 22 07 00 - PLUMBING INSULATION

1.1 SUMMARY

- A. Section Includes:
 - 1. Plumbing piping insulation, jackets and accessories.
 - 2. Plumbing equipment insulation, jackets and accessories.

1.2 SUBMITTALS

- A. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service, and location.
- B. Manufacturer's Installation Instructions: Submit manufacturers published literature indicating proper installation procedures.
- C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.3 QUALITY ASSURANCE

- A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding 50 in accordance with ASTM E84
- B. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.
- C. Factory fabricated fitting covers manufactured in accordance with ASTM C450.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.
- B. Maintain temperature before, during, and after installation for minimum period of 24 hours.

1.6 WARRANTY

- A. Furnish five year manufacturer warranty for man made fiber.

PART 2 PRODUCTS

2.1 MANUFACTURER

2.2 PIPE INSULATION

2.3 PIPE INSULATION

- A. TYPE P-1: ASTM C547, molded glass fiber pipe insulation.
 - 1. Thermal Conductivity: 0.23 at 75 degrees F.
 - 2. Operating Temperature Range: 0 to 850 degrees F.
 - 3. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied reinforced foil kraft with self-sealing adhesive joints.
 - 4. Jacket Temperature Limit: minus 20 to 150 degrees F.

- B. TYPE P-2: ASTM C547, molded glass fiber pipe insulation.
 - 1. Thermal Conductivity: 0.23 at 75 degrees F.
 - 2. Operating Temperature Range: 0 to 850 degrees F.

- C. TYPE P-3: ASTM C612; semi-rigid, fibrous glass board noncombustible, end grain adhered to jacket.
 - 1. Thermal Conductivity: 0.27 at 75 degrees F.
 - 2. Operating Temperature Range: 0 to 650 degrees F.
 - 3. Vapor Barrier Jacket: ASTM C1136, Type II, factory applied reinforced foil kraft with self-sealing adhesive joints.
 - 4. Jacket Temperature Limit: minus 20 to 150 degrees F.

- D. TYPE P-4: ASTM C612; semi-rigid, fibrous glass board noncombustible.
 - 1. Thermal Conductivity: 0.27 at 75 degrees F.
 - 2. Operating Temperature Range: 0 to 650 degrees F.

- E. TYPE P-5: ASTM C534, Type I, flexible, closed cell elastomeric insulation, tubular.
 - 1. Thermal Conductivity: 0.27 at 75 degrees F.
 - 2. Operating Temperature Range: Range: Minus 70 to 180 degrees F.

- F. TYPE P-6: ASTM C534, Type I, flexible, closed cell elastomeric insulation, tubular.
 - 1. Thermal Conductivity: 0.30 at 75 degrees F.
 - 2. Maximum Service Temperature: 300 degrees F.
 - 3. Operating Temperature Range: Range: Minus 58 to 300 degrees F.

- G. TYPE P-7: ASTM C534, Type I, flexible, nonhalogen, closed cell elastomeric insulation, tubular.
 - 1. Thermal Conductivity: 0.27 at 75 degrees F.
 - 2. Maximum Service Temperature: 250 degrees F.
 - 3. Operating Temperature Range: Range: Minus 58 to 250 degrees F.

- H. TYPE P-8: ASTM C547, Type I or II, mineral fiber preformed pipe insulation, noncombustible.
 - 1. Thermal Conductivity: 0.23 at 75 degrees F.
 - 2. Maximum Service Temperature: 1200 degrees F.
 - 3. Canvas Jacket: UL listed, 6 oz/sq yd, plain weave cotton fabric treated with fire retardant lagging adhesive.

- I. TYPE P-9: ASTM C591, Type IV, polyisocyanurate foam insulation, formed into shapes for use as pipe insulation.
 - 1. Operating Temperature Range: Range: Minus 297 to 300 degrees F.
 - 2. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied film of 4-6 mils thickness and water vapor permeance of 0.02 perms.

- J. TYPE P-10: ASTM C578, Type XIII, extruded polystyrene insulation, formed into shapes for use as pipe insulation.
 - 1. Thermal Conductivity: 180 day aged value of 0.259 at 75 degrees F.
 - 2. Operating Temperature Range: Range: Minus 297 to 165 degrees F.
 - 3. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied film of 4-6 mils thickness and water vapor permeance of 0.02 perms.

- K. TYPE P-11: ASTM C533; Type I, hydrous calcium silicate pipe insulation, rigid molded white; asbestos free.
 - 1. Thermal Conductivity: 0.45 at 200 degrees F.
 - 2. Operating Temperature Range: 140 to 1200 degrees F.

2.4 PIPE INSULATION JACKETS

- A. Vapor Retarder Jacket:
 - 1. ASTM C921, white Kraft paper with glass fiber yarn, bonded to aluminized film.
 - 2. Water vapor transmission: ASTM E96/E96M; 0.02 perm-inches.

- B. PVC Plastic Pipe Jacket:
 - 1. Product Description: ASTM D1785, One piece molded type fitting covers and sheet material, off-white color.

- C. ABS Plastic Pipe Jacket:
 - 1. Jacket: One piece molded type fitting covers and sheet material, off-white color.

- D. Aluminum Pipe Jacket:
 - 1. ASTM B209
 - 2. Joining: Longitudinal slip joints and 2 inch laps.
 - 3. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.
 - 4. Metal Jacket Bands: 1/2 inch wide aluminum.

- E. Stainless Steel Pipe Jacket:
 - 1. ASTM A240/A240M OR ASTM 666 Type stainless steel.
 - 2. Thickness: 0.010 inch thick.
 - 3. Finish: Smooth
 - 4. Metal Jacket Bands: 1/2 inch wide stainless steel.

- F. Field Applied Glass Fiber Fabric Jacket System:
 - 1. Insulating Cement/Mastic: ASTM C195; hydraulic setting on mineral wool.
 - 2. Glass Fiber Fabric:
 - a. Cloth: Untreated; 9 oz/sq yd weight.
 - b. Blanket: 1.0 lb/cu ft density.
 - 3. Indoor Vapor Retarder Finish:

- a. Cloth: Untreated; 9 oz/sq yd weight.
- b. Vinyl emulsion type acrylic, compatible with insulation.

2.5 PIPE INSULATION ACCESSORIES

- A. Vapor Retarder Lap Adhesive: Compatible with insulation.
- B. Covering Adhesive Mastic: Compatible with insulation.
- C. Piping 1-1/2 inches diameter and smaller: Galvanized steel insulation protection shield. MSS SP-69, Type 40. Length: Based on pipe size and insulation thickness.
- D. Piping 2 inches diameter and larger: Wood insulation saddle, hard maple. Inserts length: not less than 6 inches long, matching thickness and contour of adjoining insulation.
- E. Closed Cell Elastomeric Insulation Pipe Hanger: Polyurethane insert with aluminum single piece construction with self adhesive closure. Thickness to match pipe insulation.
- F. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.
- G. Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement: ASTM C449/C449M.
- H. Insulating Cement: ASTM C195; hydraulic setting on mineral wool.
- I. Adhesives: Compatible with insulation.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify piping has been tested before applying insulation materials.
- B. Verify surfaces are clean and dry, with foreign material removed.

3.2 INSTALLATION - PIPING SYSTEMS

- A. Piping Exposed to View in Finished Spaces: Locate insulation and cover seams in least visible locations.
- B. Continue insulation through penetrations of building assemblies or portions of assemblies having fire resistance rating of one hour or less. Provide intumescent firestopping when continuing insulation through assembly. Finish at supports, protrusions, and interruptions.
- C. Piping Systems Conveying Fluids Below Ambient Temperature:
 - 1. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, and expansion joints.
 - 2. Furnish factory-applied or field-applied vapor retarder jackets. Secure factory-applied jackets with pressure sensitive adhesive self-sealing longitudinal laps and butt strips. Secure

- field-applied jackets with outward clinch expanding staples and seal staple penetrations with vapor retarder mastic.
3. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor retarder adhesive or PVC fitting covers.
- D. Glass Fiber Board Insulation:
1. Apply insulation close to equipment by grooving, scoring, and beveling insulation. Fasten insulation to equipment with studs, pins, clips, adhesive, wires, or bands.
 2. Fill joints, cracks, seams, and depressions with bedding compound to form smooth surface. On cold equipment, use vapor retarder cement.
 3. Cover wire mesh or bands with cement to a thickness to remove surface irregularities.
- E. Polyisocyanurate Foam Insulation or Extruded Polystyrene Insulation:
1. Wrap elbows and fitting with vapor retarder tape.
 2. Seal butt joints with vapor retarder tape.
- F. Hot Piping Systems less than 140 degrees F:
1. Furnish factory-applied or field-applied standard jackets. Secure with outward clinch expanding staples or pressure sensitive adhesive system on standard factory-applied jacket and butt strips or both.
 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
 3. Do not insulate unions and flanges at equipment, but bevel and seal ends of insulation at such locations.
- G. Hot Piping Systems greater than 140 degrees F:
1. Furnish factory-applied or field-applied standard jackets. Secure with outward clinch expanding staples or pressure sensitive adhesive system on standard factory-applied jacket and butt strips or both.
 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
 3. Insulate flanges and unions at equipment.
- H. Inserts and Shields:
1. Piping 1-1/2 inches Diameter and Smaller: Install galvanized steel shield between pipe hanger and insulation.
 2. Piping 2 inches Diameter and Larger: Install insert between support shield and piping and under finish jacket.
 - a. Insert Configuration: Minimum 6 inches long, of thickness and contour matching adjoining insulation; may be factory fabricated.
 - b. Insert Material: Compression resistant insulating material suitable for planned temperature range and service.
 3. Piping Supported by Roller Type Pipe Hangers: Install galvanized steel shield between roller and inserts.
- I. Insulation Terminating Points:
1. Coil Branch Piping 1 inch and Smaller: Terminate hot water piping at union upstream of the coil control valve.

- 2. Chilled Water Coil Branch Piping: Insulate chilled water piping and associated components up to coil connection.
 - 3. Condensate Piping: Insulate entire piping system and components to prevent condensation.
- J. Closed Cell Elastomeric Insulation:
- 1. Push insulation on to piping.
 - 2. Miter joints at elbows.
 - 3. Seal seams and butt joints with manufacturer's recommended adhesive.
 - 4. When application requires multiple layers, apply with joints staggered.
 - 5. Insulate fittings and valves with insulation of like material and thickness as adjacent pipe.
- K. High Temperature Pipe Insulation:
- 1. Install in multiple layers to meet thickness scheduled.
 - 2. Attach each layer with bands. Secure first layer with bands before installing next layer.
 - 3. Stagger joints between layers.
 - 4. Cover with aluminum jacket with seams located on bottom side of horizontal piping.
- L. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces: Finish with aluminum jacket.
- M. Piping Exterior to Building: Provide vapor retarder jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor retarder cement. Cover with aluminum jacket with seams located at 3 or 9 o'clock position on side of horizontal piping with overlap facing down to shed water or on bottom side of horizontal piping.
- N. Buried Piping: Insulate only where insulation manufacturer recommends insulation product may be installed in trench, tunnel or direct buried. Install factory fabricated assembly with inner all-purpose service jacket with self-sealing lap, and asphalt impregnated open mesh glass fabric, with 1 mil thick aluminum foil sandwiched between three layers of bituminous compound; outer surface faced with polyester film.

3.3 SCHEDULES

A. Water Supply Services Piping Insulation Schedule:

PIPING SYSTEM	INSULATION TYPE	PIPE SIZE	INSULATION THICKNESS inches
Domestic Hot Water Supply and Recirculation	[P-1]	1-1/4 inches and smaller 1-1/2 inches and larger	0.5 1.0
Domestic Hot Water Supply and Recirculation systems with domestic water temperature maintenance cable	[P-1]	1 inch and smaller 1-1/4 inches to 2 inches 2-1/2 inches and larger	1.0 1.5 2.0
Domestic Cold Water	[P-1] [or] [P-5]	1-1/4 inches and smaller 1-1/2 inches and larger	0.5 1.0

END OF SECTION

SECTION 22 40 00 - PLUMBING FIXTURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Service sinks.

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's literature for plumbing fixtures.

1.3 SUSTAINABLE DESIGN SUBMITTALS

- A. Manufacturer's Certificate: Certify products meet or exceed specified sustainable design requirements.
 - 1. Water Efficiency Certificates:
 - a. Certify plumbing fixture flow rates.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit literature and parts list.

1.5 QUALITY ASSURANCE

- A. Provide plumbing fixture fittings in accordance with ASME A112.18.1 that prevent backflow from fixture into water distribution system.

PART 2 PRODUCTS

2.1 SERVICE SINKS

- A. Bowl: **24 x 24 x 10 inch** high molded stone, floor mounted, with **one inch** wide shoulders, stainless steel strainer.
- B. Trim: Exposed wall type supply with **lever** handles, spout wall brace, vacuum breaker, hose end spout, strainers, eccentric adjustable inlets, integral screwdriver stops with covering caps and adjustable threaded wall flanges, hose clamp and mop hanger.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify adjacent construction is ready to receive rough-in work of this section.

- B. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough in and installation.

3.2 INSTALLATION

- A. Install each fixture with chrome plated rigid or flexible supplies with screwdriver stops, reducers, and escutcheons.
- B. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

END OF SECTION

SECTION 23 05 00 - COMMON WORK RESULTS FOR HVAC

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Identification for HVAC Piping and Equipment.
 - 2. Sleeves.
 - 3. Mechanical sleeve seals.
 - 4. Formed steel channel.
 - 5. Firestopping relating to HVAC work.
 - 6. Firestopping accessories.

1.2 SYSTEM DESCRIPTION

- A. Firestopping: Conform to applicable code for fire resistance ratings and surface burning characteristics.

1.3 SUBMITTALS

- A. Shop Drawings: Submit for piping and equipment identification list of wording, symbols, letter size, and color coding for pipe identification and valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
- B. Product Data for Pipe and Equipment Identification: Submit for mechanical identification manufacturers catalog literature for each product required.

PART 2 PRODUCTS

2.1 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

- A. Plastic Nameplates: Laminated three-layer plastic with engraved black letters on light background color.
- B. Plastic Tags: Laminated three-layer plastic with engraved black letters on light background color, minimum 1-1/2 inches diameter.
- C. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener. Color and Lettering: Conform to ASME A13.1.
- D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings. Color and Lettering: Conform to ASME A13.1.
- E. Plastic Underground Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.2 SLEEVES

- A. Sleeves for Pipes Through Non-fire Rated Floors: 18 gage thick galvanized steel.
- B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.
- C. Sleeves for Round Ductwork: Galvanized steel.
- D. Sleeves for Rectangular Ductwork: Galvanized steel or wood.
- E. Sealant: Acrylic.

2.3 MECHANICAL SLEEVE SEALS

- A. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

2.4 FORMED STEEL CHANNEL

- A. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

2.5 FIRESTOPPING

- A. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
 - 1. Silicone Firestopping Elastomeric Firestopping: Single or Multiple component silicone elastomeric compound and compatible silicone sealant.
 - 2. Foam Firestopping Compounds: Single or Multiple component foam compound.
 - 3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
 - 4. Fiber Stuffing and Sealant Firestopping: Composite of mineral or ceramic fiber stuffing insulation with silicone elastomer for smoke stopping.
 - 5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
 - 6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.
 - 7. Firestop Pillows: Formed mineral fiber pillows.

2.6 FIRESTOPPING ACCESSORIES

- A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.

- B. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify openings are ready to receive sleeves.

3.2 INSTALLATION - PIPING AND EQUIPMENT IDENTIFICATION

- A. Install plastic nameplates with adhesive.
- B. Install plastic tags with corrosion resistant metal chain.

3.3 INSTALLATION - SLEEVES

- A. Exterior watertight entries: Seal with mechanical sleeve seals.
- B. Set sleeves in position in forms. Provide reinforcing around sleeves.
- C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- D. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.
- E. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- F. Install chrome plated steel or stainless steel escutcheons at finished surfaces.

3.4 INSTALLATION - FIRESTOPPING

- A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.

END OF SECTION

SECTION 23 05 93 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Testing adjusting, and balancing of air systems.

1.2 SUBMITTALS

- A. Draft Reports: Submit for review prior to final acceptance of Project.
- B. Test Reports: Submit prior to final acceptance of Project and for inclusion in operating and maintenance manuals. Assemble in soft cover, letter size, 3-ring binder, with table of contents page and tabs, and cover identification. Include reduced scale drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.
- C. Report Forms: AABC MN-1 National Standards for Total System Balance forms, NEBB forms.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Before starting work, verify systems are complete and operable.
- B. Report defects, deficiencies, or abnormal conditions in mechanical systems preventing system balance.
- C. Beginning of work means acceptance of existing conditions.

3.2 INSTALLATION TOLERANCES

- A. Air Handling Systems: Adjust to within plus or minus 5 percent of design for supply systems and plus or minus 10 percent of design for return and exhaust systems.
- B. Air Outlets and Inlets: Adjust to within plus or minus 10 percent of design.

3.3 AIR SYSTEM PROCEDURE

- A. Adjust air handling and distribution systems to deliver design supply, return, and exhaust air quantities within previously stated tolerances.

- B. Make air flow rate measurements in ducts by traverse of entire cross sectional area of duct.
- C. Measure air quantities at air inlets and outlets.
- D. Use volume control devices to regulate air quantities only to extent those adjustments do not create objectionable air motion or sound levels. Change volume using dampers mounted in ducts.
- E. Vary total system air quantities by adjustment of fan speeds. Provide drive changes to accomplish system air flow. Vary branch air quantities by damper regulation.
- F. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across fan. Allow for pressure drop equivalent to 50 percent loading of filters.
- G. Adjust automatic outside air, return air, and exhaust air dampers for design conditions.
- H. Measure temperature conditions across outside air, return air, and exhaust air dampers to check leakage.
- I. At modulating damper locations, take measurements and balance at extreme conditions.

3.4 FIELD QUALITY CONTROL

- A. Verify recorded data represents actually measured or observed conditions.
- B. Permanently mark settings of valves, dampers, and other adjustment devices. Set and lock memory stops.

END OF SECTION

SECTION 23 07 00 - HVAC INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. HVAC piping insulation, jackets and accessories.
 - 2. HVAC ductwork insulation, jackets, and accessories.

1.2 SUBMITTALS

- A. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service, and location.

1.3 QUALITY ASSURANCE

- A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding 50 in accordance with ASTM E84.
- B. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.
- C. Factory fabricated fitting covers manufactured in accordance with ASTM C450.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.
- B. Maintain temperature before, during, and after installation for minimum period of 24 hours.

1.6 WARRANTY

- A. Furnish five year manufacturer warranty for man made fiber.

PART 2 PRODUCTS

2.1 PIPE INSULATION

- A. TYPE P-1: ASTM C547, molded glass fiber pipe insulation.

1. Thermal Conductivity: 0.23 at 75 degrees F.
 2. Operating Temperature Range: 0 to 850 degrees F.
 3. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied reinforced foil kraft with self-sealing adhesive joints.
 4. Jacket Temperature Limit: minus 20 to 150 degrees F.
- B. TYPE P-2: ASTM C547, molded glass fiber pipe insulation.
1. Thermal Conductivity: 0.23 at 75 degrees F.
 2. Operating Temperature Range: 0 to 850 degrees F.
- C. TYPE P-3: ASTM C612; semi-rigid, fibrous glass board noncombustible, end grain adhered to jacket.
1. Thermal Conductivity: 0.27 at 75 degrees F.
 2. Operating Temperature Range: 0 to 650 degrees F.
 3. Vapor Barrier Jacket: ASTM C1136, Type II, factory applied reinforced foil kraft with self-sealing adhesive joints.
 4. Jacket Temperature Limit: minus 20 to 150 degrees F.
- D. TYPE P-4: ASTM C612; semi-rigid, fibrous glass board noncombustible.
1. Thermal Conductivity: 0.27 at 75 degrees F.
 2. Operating Temperature Range: 0 to 650 degrees F.
- E. TYPE P-5: ASTM C534, Type I, flexible, closed cell elastomeric insulation, tubular.
1. Thermal Conductivity: 0.27 at 75 degrees F.
 2. Operating Temperature Range: Range: Minus 70 to 180 degrees F.
- F. TYPE P-6: ASTM C534, Type I, flexible, closed cell elastomeric insulation, tubular.
1. Thermal Conductivity: 0.30 at 75 degrees F.
 2. Maximum Service Temperature: 300 degrees F.
 3. Operating Temperature Range: Range: Minus 58 to 300 degrees F.
- G. TYPE P-7: ASTM C534, Type I, flexible, nonhalogen, closed cell elastomeric insulation, tubular.
1. Thermal Conductivity: 0.27 at 75 degrees F.
 2. Maximum Service Temperature: 250 degrees F.
 3. Operating Temperature Range: Range: Minus 58 to 250 degrees F.
- H. TYPE P-8: ASTM C547, Type I or II, mineral fiber preformed pipe insulation, noncombustible.
1. Thermal Conductivity: 0.23 at 75 degrees F.
 2. Maximum Service Temperature: 1200 degrees F.
 3. Canvas Jacket: UL listed, 6 oz/sq yd, plain weave cotton fabric treated with fire retardant lagging adhesive.
- I. TYPE P-9: ASTM C591, Type IV, polyisocyanurate foam insulation, formed into shapes for use as pipe insulation.
1. Operating Temperature Range: Range: Minus 297 to 300 degrees F.
 2. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied film of 4-6 mils thickness and water vapor permeance of 0.02 perms.

- J. TYPE P-10: ASTM C578, Type XIII, extruded polystyrene insulation, formed into shapes for use as pipe insulation.
 - 1. Thermal Conductivity: 180 day aged value of 0.259 at 75 degrees F.
 - 2. Operating Temperature Range: Range: Minus 297 to 165 degrees F.
 - 3. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied film of 4-6 mils thickness and water vapor permeance of 0.02 perms.
- K. TYPE P-11: ASTM C533; Type I, hydrous calcium silicate pipe insulation, rigid molded white; asbestos free.
 - 1. Thermal Conductivity: 0.45 at 200 degrees F.
 - 2. Operating Temperature Range: 140 to 1200 degrees F.

2.2 PIPE INSULATION JACKETS

- A. Vapor Retarder Jacket:
 - 1. ASTM C921, white Kraft paper with glass fiber yarn, bonded to aluminized film.
 - 2. Water vapor transmission: ASTM E96/E96M; 0.02 perm-inches.
- B. PVC Plastic Pipe Jacket:
 - 1. Product Description: ASTM D1785, One piece molded type fitting covers and sheet material, off-white color.
- C. ABS Plastic Pipe Jacket:
 - 1. Jacket: One piece molded type fitting covers and sheet material, off-white color.
- D. Aluminum Pipe Jacket:
 - 1. ASTM B209
 - 2. Joining: Longitudinal slip joints and 2 inch laps.
 - 3. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.
 - 4. Metal Jacket Bands: 1/2 inch wide aluminum.
- E. Stainless Steel Pipe Jacket:
 - 1. ASTM A240/A240M OR ASTM 666 Type stainless steel.
 - 2. Thickness: 0.010 inch thick.
 - 3. Finish: Smooth
 - 4. Metal Jacket Bands: 1/2 inch wide stainless steel.
- F. Field Applied Glass Fiber Fabric Jacket System:
 - 1. Insulating Cement/Mastic: ASTM C195; hydraulic setting on mineral wool.
 - 2. Glass Fiber Fabric:
 - a. Cloth: Untreated; 9 oz/sq yd weight.
 - b. Blanket: 1.0 lb/cu ft density.
 - 3. Indoor Vapor Retarder Finish:
 - a. Cloth: Untreated; 9 oz/sq yd weight.
 - b. Vinyl emulsion type acrylic, compatible with insulation.

2.3 PIPE INSULATION ACCESSORIES

- A. Vapor Retarder Lap Adhesive: Compatible with insulation.

- B. Covering Adhesive Mastic: Compatible with insulation.
- C. Piping 1-1/2 inches diameter and smaller: Galvanized steel insulation protection shield. MSS SP-69, Type 40. Length: Based on pipe size and insulation thickness.
- D. Piping 2 inches diameter and larger: Wood insulation saddle, hard maple. Inserts length: not less than 6 inches long, matching thickness and contour of adjoining insulation.
- E. Closed Cell Elastomeric Insulation Pipe Hanger: Polyurethane insert with aluminum single piece construction with self adhesive closure. Thickness to match pipe insulation.
- F. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.
- G. Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement: ASTM C449/C449M.
- H. Insulating Cement: ASTM C195; hydraulic setting on mineral wool.
- I. Adhesives: Compatible with insulation.

2.4 DUCTWORK INSULATION

- A. TYPE D-1: ASTM C1290, Type III, flexible glass fiber, commercial grade with factory applied reinforced aluminum foil jacket meeting ASTM C1136, Type II.
 1. Thermal Conductivity: 0.25 at 75 degrees F.
 2. Maximum Operating Temperature: 250 degrees F.
 3. Density: 0.75 pound per cubic foot.
- B. TYPE D-2: ASTM C612, Type IA or IB, rigid glass fiber, with factory applied meeting ASTM C1136, Type II.
 1. Thermal Conductivity: 0.22 at 75 degrees F.
 2. Density: 1.6 pound per cubic foot.
- C. TYPE D-3: ASTM C612, Type IA or IB, rigid glass fiber, no facing.
 1. Thermal Conductivity: 0.22 at 75 degrees F.
 2. Density: 1.6 pound per cubic foot.
- D. TYPE D-4: ASTM C1071, Type I, flexible, glass fiber duct liner with coated air side.
 1. Thermal Conductivity: 0.24 at 75 degrees F.
 2. Density: 1.5 pound per cubic foot.
 3. Maximum Operating Temperature: 250 degrees F.
 4. Maximum Air Velocity: 6,000 feet per minute.
- E. TYPE D-5: ASTM C1071, Type II, rigid, glass fiber duct liner with coated air side.
 1. Thermal Conductivity: 0.23 at 75 degrees F.
 2. Density: 3.0 pound per cubic foot.
 3. Maximum Operating Temperature: 250 degrees F.
 4. Maximum Air Velocity: 4,000 feet per minute.
- F. TYPE D-6: ASTM C534, Type II, flexible, closed cell elastomeric insulation, sheet.

1. Thermal Conductivity: 0.27 at 75 degrees F.
 2. Service Temperature Range: Range: Minus 58 to 180 degrees F.
- G. TYPE D-7: ASTM C534, Type II, flexible, closed cell elastomeric insulation, sheet laminated with thermoplastic rubber membrane.
1. Thermal Conductivity: 0.27 at 75 degrees F.
 2. Service Temperature Range: Range: Minus 58 to 180 degrees F.
- H. TYPE D-8: Inorganic blanket encapsulated with scrim reinforced foil meeting UL 1978.
1. Thermal Conductivity: 0.42 at 500 degrees F.
 2. Weight: 1.4 pound per square foot.
 3. Surface Burning Characteristics: Maximum 0/0 flame spread/smoke developed index when tested in accordance with ASTM E84.

2.5 DUCTWORK INSULATION JACKETS

- A. Aluminum Duct Jacket:
1. ASTM B209.
 2. Thickness: 0.016 inch thick sheet.
 3. Finish: Smooth.
 4. Joining: Longitudinal slip joints and 2 inch laps.
 5. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.
 6. Metal Jacket Bands: 3/8 inch wide; thick aluminum.
- B. Vapor Retarder Jacket:
1. Kraft paper with glass fiber yarn and bonded to aluminized film.
 2. Water vapor transmission: ASTM E96/E96M; 0.02 perm.
 3. Secure with pressure sensitive tape.
- C. Canvas Duct Jacket: UL listed, 6 oz/sq yd , plain weave cotton fabric with fire retardant lagging adhesive compatible with insulation.
- D. Outdoor Duct Jacket: Asphalt impregnated and coated sheet, 50 lb/square.
- E. Membrane Duct Jacket: ASTM D4637; Type I, EPDM; non-reinforced.

2.6 DUCTWORK INSULATION ACCESSORIES

- A. Vapor Retarder Tape:
1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.
- B. Vapor Retarder Lap Adhesive: Compatible with insulation.
- C. Adhesive: Waterproof, ASTM E162 fire-retardant type.
- D. Liner Fasteners: Galvanized steel head.
- E. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.

- F. Lagging Adhesive: Fire retardant type with maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
- G. Impale Anchors: Galvanized steel, 12 gage self-adhesive pad.
- H. Adhesives: Compatible with insulation.
- I. Membrane Adhesives: As recommended by membrane manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify piping and ductwork has been tested before applying insulation materials.
- B. Verify surfaces are clean and dry, with foreign material removed.

3.2 INSTALLATION - PIPING SYSTEMS

- A. Piping Exposed to View in Finished Spaces: Locate insulation and cover seams in least visible locations.
- B. Continue insulation through penetrations of building assemblies or portions of assemblies having fire resistance rating of one hour or less. Provide intumescent firestopping when continuing insulation through assembly. Finish at supports, protrusions, and interruptions.
- C. Piping Systems Conveying Fluids Below Ambient Temperature:
 - 1. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, and expansion joints.
 - 2. Furnish factory-applied or field-applied vapor retarder jackets. Secure factory-applied jackets with pressure sensitive adhesive self-sealing longitudinal laps and butt strips. Secure field-applied jackets with outward clinch expanding staples and seal staple penetrations with vapor retarder mastic.
 - 3. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor retarder adhesive or PVC fitting covers.
- D. Glass Fiber Board Insulation:
 - 1. Apply insulation close to equipment by grooving, scoring, and beveling insulation. Fasten insulation to equipment with studs, pins, clips, adhesive, wires, or bands.
 - 2. Fill joints, cracks, seams, and depressions with bedding compound to form smooth surface. On cold equipment, use vapor retarder cement.
 - 3. Cover wire mesh or bands with cement to a thickness to remove surface irregularities.
- E. Polyisocyanurate Foam Insulation and Extruded Polystyrene Insulation:
 - 1. Wrap elbows and fitting with vapor retarder tape.
 - 2. Seal butt joints with vapor retarder tape.
- F. Hot Piping Systems less than 140:

1. Furnish factory-applied or field-applied standard jackets. Secure with outward clinch expanding staples or pressure sensitive adhesive system on standard factory-applied jacket and butt strips or both.
 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
 3. Do not insulate unions and flanges at equipment, but bevel and seal ends of insulation at such locations.
- G. Hot Piping Systems greater than 140 degrees F:
1. Furnish factory-applied or field-applied standard jackets. Secure with outward clinch expanding staples or pressure sensitive adhesive system on standard factory-applied jacket and butt strips or both.
 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
 3. Insulate flanges and unions at equipment.
- H. Inserts and Shields:
1. Piping 1-1/2 inches Diameter and Smaller: Install galvanized steel shield between pipe hanger and insulation.
 2. Piping 2 inches Diameter and Larger: Install insert between support shield and piping and under finish jacket.
 - a. Insert Configuration: Minimum 6 inches long, of thickness and contour matching adjoining insulation; may be factory fabricated.
 - b. Insert Material: Compression resistant insulating material suitable for planned temperature range and service.
 3. Piping Supported by Roller Type Pipe Hangers: Install galvanized steel shield between roller and inserts.
- I. Insulation Terminating Points:
1. Coil Branch Piping **1 inch** and Smaller: Terminate hot water piping at union upstream of the coil control valve.
 2. Chilled Water Coil Branch Piping: Insulate chilled water piping and associated components up to coil connection.
 3. Condensate Piping: Insulate entire piping system and components to prevent condensation.
- J. Closed Cell Elastomeric Insulation:
1. Push insulation on to piping.
 2. Miter joints at elbows.
 3. Seal seams and butt joints with manufacturer's recommended adhesive.
 4. When application requires multiple layers, apply with joints staggered.
 5. Insulate fittings and valves with insulation of like material and thickness as adjacent pipe.
- K. High Temperature Pipe Insulation:
1. Install in multiple layers to meet thickness scheduled.
 2. Attach each layer with bands. Secure first layer with bands before installing next layer.
 3. Stagger joints between layers.
 4. Finish with canvas jacket sized for finish painting.
 5. Cover with aluminum jacket with seams located on bottom side of horizontal piping.

- L. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces: Finish with aluminum jacket.
- M. Piping Exterior to Building: Provide vapor retarder jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor retarder cement. Cover with aluminum jacket with seams located at 3 or 9 o'clock position on side of horizontal piping with overlap facing down to shed water or on bottom side of horizontal piping.
- N. Prepare pipe insulation for finish painting.

3.3 INSTALLATION - DUCTWORK SYSTEMS

- A. Duct dimensions indicated on Drawings are finished inside dimensions.
- B. Insulated ductwork conveying air below ambient temperature:
 1. Provide insulation with vapor retarder jackets.
 2. Finish with tape and vapor retarder jacket.
 3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
 4. Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.
- C. Insulated ductwork conveying air above ambient temperature:
 1. Provide with or without standard vapor retarder jacket.
 2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.
- D. Ductwork Exposed in Mechanical Equipment Rooms or Finished Spaces Finish with aluminum jacket.
- E. External Glass Fiber Duct Insulation:
 1. Secure insulation with vapor retarder with wires and seal jacket joints with vapor retarder adhesive or tape to match jacket.
 2. Secure insulation without vapor retarder with staples, tape, or wires.
 3. Install without sag on underside of ductwork. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift ductwork off trapeze hangers and insert spacers.
 4. Seal vapor retarder penetrations by mechanical fasteners with vapor retarder adhesive.
 5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.
- F. External Elastomeric Duct Insulation:
 1. Adhere to clean oil-free surfaces with full coverage of adhesive.
 2. Seal seams and butt joints with manufacturer's recommended adhesive.
 3. When application requires multiple layers, apply with joints staggered.
 4. Insulate standing metal duct seams with insulation of like material and thickness as adjacent duct surface. Apply adhesive at joints with flat duct surfaces.
 5. Lift ductwork off trapeze hangers and insert spacers.
- G. Kitchen Exhaust Ductwork:

1. Cover duct by wrapping with insulation using overlap method, checkerboard overlap method or butt joint with collar method.
2. Overlap seams of each method by 3 inches.
3. Attach insulation using steel banding or by welded pins and clips.
4. Install insulation without sag on underside of ductwork. Use additional fasteners to prevent sagging.

H. Ducts Exterior to Building:

1. Install insulation according to external duct insulation paragraph above.
2. Provide external insulation with vapor retarder jacket. Cover with with caulked aluminum jacket with seams located on bottom side of horizontal duct section.
3. Finish with aluminum duct jacket.
4. Calk seams at flanges and joints. Located major longitudinal seams on bottom side of horizontal duct sections.

3.4 SCHEDULES

A. Cooling Services Piping Insulation Schedule:

PIPING SYSTEM	INSULATION TYPE	PIPE SIZE	INSULATION THICKNESS Inches
Chilled Water Supply and Return [40 to 60 degrees F]	[P-1]	1-1/4 inches and smaller	0.5
		1-1/2 inches inch and larger	1.0
Chilled Water Supply and Return [less than 40 degrees F]	[P-1]	3/4 inch and smaller	0.5
		1 inch to 6 inches	1.0
		8 inches and larger	1.5
Glycol Supply and Return	[P-1]	1-1/4 inches and smaller	0.5
		1-1/2 inches inch and larger	1.0
Condensate Piping from Cooling Coils	[P-5]	All sizes	0.5
Refrigerant Suction	[P-5]	All sizes	0.5
Refrigerant Hot Gas	[P-5]	All sizes	0.5

B. Ductwork Insulation Schedule:

DUCTWORK SYSTEM	INSULATION TYPE	INSULATION THICKNESS Inches
Combustion Air	[D-2]	2
Outside Air Intake	[D-2]	2
Supply Ducts (internally insulated)	[D-4] [D-5]	1.5
Return Ducts (internally insulated)	[D-4] [D-5]	1.5

Supply Ducts (externally insulated) [Thickness indicated is installed thickness.]	[D-1] [D-2] [D-6]	1.5
Return Ducts (externally insulated) [Thickness indicated is installed thickness.]	[D-1] [D-2] [D-6]	1.5
Duct Coils	D-1	1.5
Kitchen Exhaust Duct (2 layers of 1-1/2 inch (40 mm) each)	D-8	3.0
[Supply Air,] [Return Air,] [Exhaust Air] (exterior to building on roof)	[D-2] [D-7]	2.0
[Supply Air,] [Return Air,] [Exhaust Air] (exterior to building on roof)	[D-2] [D-7]	2.0
Exhaust Ducts Within 10 feet (3 m) of Exterior Openings [Thickness indicated is installed thickness.]	[D-1] [D-2]	1.5
Exhaust Ducts Exposed to Outdoor Air	D-2	2.0
Rectangular Supply Ducts Downstream of Variable Air Volume Boxes (internally insulated)	[D-4] [D-5]	1.5
Rectangular Supply Ducts Downstream of Variable Air Volume Boxes (externally insulated)	[D-1] [D-2]	1.5
Round Supply Ducts Downstream of Variable Air Volume Boxes (externally insulated)	[D-1] [D-2]	1.5
Transfer Air Ducts (internally insulated)	[D-4] [D-5]	1.5

END OF SECTION

SECTION 23 30 00 - HVAC AIR DISTRIBUTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Ductwork.
 2. Ductwork accessories.
 3. Fans.
 4. Terminal units.
 5. Air Outlets.
 6. Filters.

1.2 SUBMITTALS

- A. Shop Drawings: Submit duct fabrication drawings, drawn to scale not smaller than one eighth inch equals 1 foot, on drawing sheets same size as Contract Documents, indicating:
1. Fabrication, assembly, and installation details, including plans, elevations, sections, details of components, and attachments to other work.
 2. Duct layout, indicating pressure classifications and sizes in plan view. For exhaust duct systems, indicate classification of materials handled as defined in this section.
 3. Fittings.
 4. Reinforcing details and spacing.
 5. Seam and joint construction details.
 6. Penetrations through fire rated and other walls.
 7. Terminal unit, coil, and humidifier installations.
 8. Hangers and supports, including methods for building attachment, vibration isolation, and duct attachment.
- B. Product Data:
1. Submit sizes, capacities, materials, controls and connections to other work.
 2. Submit catalog performance ratings, construction, electric and duct connections, flashing and dimensions for fans and exhausters.
- C. Operation and Maintenance Data: Submit instructions for lubrication, motor and drive replacement, spare parts lists, and wiring diagrams.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit instructions for filter replacement, spare parts lists, and wiring diagrams.

PART 2 PRODUCTS

2.1 DUCTWORK

- A. Duct Materials:

1. Galvanized Steel Ducts: ASTM A653/A653M galvanized steel sheet, lock-forming quality.
 - a. Finish of steel components: Hot dipped galvanized steel with minimum 2.10 oz/sf (600 g/sq m) zinc coating both sides measured in accordance with ASTM A90/A90M and zinc chromated aluminum paint.
2. Fasteners: Rivets, bolts, or sheet metal screws.
3. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

B. Ductwork Fabrication:

1. Fabricate and support rectangular ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
2. Fabricate and support round ducts with longitudinal seams in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible (Round Duct Construction Standards). Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
3. Construct T's, bends, and elbows with minimum radius 1-1/2 times centerline duct width. Where not possible and where rectangular elbows are used, provide airfoil turning vanes. Where acoustical lining is indicated, furnish turning vanes of perforated metal with glass fiber insulation.
4. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
5. Fabricate continuously welded round and oval duct fittings two gages heavier than duct gages indicated in SMACNA Standard. Minimum 4 inch (100 mm) cemented slip joint, brazed or electric welded. Prime coat welded joints.
6. Provide standard 45-degree lateral wye takeoffs. When space does not allow 45-degree lateral wye takeoff, use 90-degree conical tee connections.
7. Seal joints between duct sections and duct seams with welds, gaskets, mastic adhesives, mastic plus embedded fabric systems, or tape.
 - a. Sealants, Mastics and Tapes: Conform to UL 181A. Provide products bearing appropriate UL 181A markings.
 - b. Do not provide sealing products not bearing UL approval markings.

C. Glass Fiber Ductwork:

1. Manufacturers:
 - a. Owens Corning.
 - b. Johns Manville.
 - c. Knauf.
2. Product Description: UL 181; 1-1/2 inch (40 mm) thick rigid glass fiber with aluminum foil, glass scrim and Kraft or plastic jacket vapor barrier; maximum 0.23 K factor at 75 degrees F (0.034 ksi at 24 degrees C).

D. Glass Fiber Ductwork Fabrication:

1. Fabricate in accordance with SMACNA Fibrous Glass Duct Construction Standards.
2. Pressure sensitive tape, UL listed, 2 inch (50 mm) wide pressure sensitive tape.
3. Machine-fabricate glass fiber ducts and fittings. Make only minor on site manual adjustments.

4. Staple duct joints and tape with 3 inch (75 mm) wide 2 mil (0.05) thick or 2 inch (50 mm) wide 3 mil (0.75 mm) thick aluminum.
- E. Kitchen Hood Exhaust Ductwork Fabrication:
1. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and NFPA 96.
 2. Exposed Kitchen Hood Exhaust Ducts: Construct of stainless steel ASTM ASTM A240/A240M OR ASTM 666, type 304 or 316 using continuous external welded joints.
 3. Concealed Kitchen Hood Exhaust Ducts: Construct of 16 gage (1.37 mm) carbon steel or 18 gage (1.09 mm) stainless steel ASTM ASTM A240/A240M OR ASTM 666, type 304 or 316 using continuous external welded joints.
- F. Flexible Ducts:
1. Manufacturers:
 - a. Atco.
 - b. Fantech.
 2. Product Description: Two ply vinyl film supported by helical wound spring steel wire.
 - a. Pressure Rating: 10 inches wg (2.50 kPa) positive and 1.0 inches wg (250 Pa) negative.
 - b. Maximum Velocity: 4000 fpm (20.3 m/s).
 - c. Temperature Range: -10 degrees F to 160 degrees F (-23 degrees C to 71 degrees C).
 3. Product Description: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helical-wound spring steel wire.
 - a. Pressure Rating: 10 inches wg (2.50 kPa) positive and 1.0 inches wg (250 Pa) negative.
 - b. Maximum Velocity: 4000 fpm (20.3 m/s).
 - c. Temperature Range: -20 degrees F to 210 degrees F (-28 degrees C to 99 degrees C).

2.2 DUCT ACCESSORIES

- A. Volume Control Dampers:
1. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated on Drawings.
 2. Fabricate splitter dampers of material matching duct gage to 24 inches (600 mm) size in each direction, and two gages heavier for larger sizes. Secure with continuous hinge or rod. Operate with minimum 1/4 inch (6 mm) diameter rod.
 3. Fabricate single blade dampers for duct sizes to 12 x 30 inch (300 x 760 mm).
 4. Fabricate multi-blade damper of opposed blade pattern with maximum blade sizes 8 x 72 inch (200 x 1825 mm). Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.
 5. Except in round ductwork 12 inches (300 mm) and smaller, furnish end bearings.
 6. Furnish locking, indicating quadrant regulators on single and multi-blade dampers. Where width exceeds 30 inches (750 mm), furnish regulator at both ends.
- B. Turning Devices and Extractors:
1. Multi-blade device with blades aligned in short dimension; steel or aluminum construction; with individually adjustable blades, mounting straps.
 2. Multi-blade device with radius blades attached to pivoting frame and bracket, steel or aluminum construction, with push-pull operator strap.
- C. Flexible Duct Connections:

1. UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, approximately 3 inches (75 mm) wide, crimped into metal edging strip.

D. Duct Access Doors:

1. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
2. Access doors smaller than 12 inches (300 mm) square secured with sash locks. Access doors with sheet metal screw fasteners are not acceptable.

E. Dynamic Fire Dampers:

1. Manufacturers:
 - a. Greenheck.
 - b. Nailor.
 - c. Ruskin.
2. Fabricate in accordance with NFPA 90A and UL 555.
3. Fire Resistance: 1-1/2 hours.
4. Dynamic Closure Rating: Dampers classified for dynamic closure to 2000 fpm (10 m/s) and 4 inches wg (1 kPa) static pressure.
5. Construction:
 - a. Integral Sleeve Frame: Minimum 20 gage (0.9 mm) roll formed galvanized steel. Length: 12 inches (305 mm).
 - b. Blades:
 - 1) Style: Curtain type.
 - 2) Action: Spring or gravity closure upon fusible link release.
 - 3) Material: Minimum 24 gage (0.6 mm) roll formed, galvanized steel.
 - c. Closure Springs: Type 301 stainless steel, constant force type, if required.
6. Fusible Link Release Temperature: 165 degrees F (74 degrees C).
7. Mounting: Vertical.

F. Back-draft Dampers:

1. Manufacturers:
 - a. Greenheck.
 - b. Ruskin.
 - c. Loren Cook.
2. Gravity back-draft dampers size 18 x 18 inches (457 x 457 mm) or smaller, furnished with air moving equipment, furnish of air moving equipment manufacturers standard construction.
3. Fabricate multi-blade, parallel action gravity balanced back-draft dampers of galvanized steel, or extruded aluminum, with center pivoted blades, with sealed edges, linked together, steel ball bearings, and plated steel pivot pin.

2.3 FANS

A. Downblast Centrifugal Roof Fans:

1. Manufacturers:
 - a. Acme.
 - b. Twin City.
 - c. Loren Cook.
 - d. Greenheck

2. Fan Unit: Downblast type. direct drive, with spun aluminum housing; resilient mounted motor; aluminum wire bird screen; square base to suit roof curb with continuous curb gaskets.
3. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheave selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.
4. Motor: Open drip proof.
5. Roof Curb: 16 inch (400 mm) or 24 inch (600 mm) high self-flashing of galvanized steel or aluminum construction with continuously welded seams, built-in cant strips, 1 inch (25 mm) insulation and curb bottom and factory installed nailer strip.
6. Disconnect Switch: Factory wired, non-fusible, in fan housing for thermal overload protected motor, NEMA 250 enclosure.
7. Backdraft Damper: Gravity actuated, aluminum multiple blade construction, felt edged with offset hinge pin, nylon bearings, blades linked.
8. Accessories:
 - a. Fan speed controller.

B. Upblast Centrifugal Roof Fans:

1. Manufacturers:
 - a. Captive Aire.
 - b. Cook.
 - c. Greenheck.
 - d. Acme.
 - e. Twin City.
2. Fan Unit: Upblast type. V-belt drive, spun aluminum housing with grease tray; resilient mounted motor; aluminum wire bird screen; square base to suit roof curb with continuous curb gaskets.
3. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheave selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.
4. Motor: Open drip proof.
5. Roof Curb: 16 inch (400 mm) or 24 inch (600 mm) high self-flashing of galvanized steel or aluminum construction with continuously welded seams, built-in cant strips, 1 inch (25 mm) insulation and curb bottom, ventilated double wall, hinged curb adapter, and factory installed nailer strip.
6. Disconnect Switch: Factory wired, non-fusible, in housing for thermal overload protected motor NEMA 250 enclosure.
7. Accessories:
 - a. Backdraft Damper: Gravity actuated, aluminum multiple blade construction, felt edged with offset hinge pin, nylon bearings, blades linked.

C. Ceiling Fans:

1. Manufacturers:
 - a. Greenheck
 - b. Cook
 - c. Panasonic
 - d. Nutone
 - e. Air King

2. Centrifugal Fan Unit: Direct driven with galvanized steel housing, resilient mounted motor, gravity backdraft damper in discharge opening, integral outlet duct collar.
3. Disconnect Switch: Fan mounted toggle switch for thermal overload protected motor.
4. Grille: Molded white plastic.
5. Wheel: Centrifugal forward curved type constructed of injection molded or polypropylene resin.
6. Motor: Open drip proof type with permanently lubricated sealed bearings and thermal overload protection.
7. Accessories:
 - a. Wall cap with damper, round duct inlet.
 - b. Wall cap with rectangular duct inlet.
 - c. Eave elbow.
 - d. Roof jack constructed of corrosion resistant, galvanized steel with baked enamel finish.
 - e. Roof cap with roof curb.
 - f. Filter box.
 - g. Brick vent constructed of extruded aluminum with inlet screen.
 - h. Rubber-in-shear vibration isolator.
 - i. Ceiling radiation damper.
 - j. Fan speed controller.
 - k. Time delay relay.

D. Combination Kitchen Hood Supply and Exhaust Fans:

1. Manufacturers:
 - a. Captive Aire
 - b. Greenheck
 - c. Cook
2. Exhaust Fan:
 - a. Refer to Upblast Centrifugal Roof Fans elsewhere in this section.
3. Supply Fan:
 - a. Fan Unit: Belt driven, double width, double inlet centrifugal blower, galvanized steel housing with galvanized finish; resilient mounted motor; square base to suit roof curb.
 - b. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheave selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.
4. Master Control Panel: Factory wired to disconnect switch for supply fan and disconnect switch for exhaust fan. Furnish with fused magnetic starters, overload protection, wiring terminals and weatherproof housing. Furnish with 120 volt control circuit transformer.
5. Fresh Air Intake Section: Constructed of galvanized steel. Size as indicated on Drawings. Galvanized steel duct support at end of intake duct.
6. Filters: 2 inch thick glass fiber media, washable and cleanable. Furnish bird screen at filter opening.
7. Roof Curb: Sized to accommodate both fans. 14 inch high self-flashing of galvanized steel construction with continuously welded seams, built-in cant strips, 1-1/2 inch, 3 pound per cubic foot density glass fiber insulation and curb bottom, and factory installed nailer strip.
8. Curb Cap: Galvanized steel, welded construction. Fits over roof curb to accommodate supply fan and exhaust fan. Insulate with 1-1/2 inch, 3 pound per cubic foot density fiberglass insulation. Furnish vented extension for exhaust fan. Comply with NFPA 96 for fan spacing and vertical separation.

9. Damper: Motor operated, aluminum multiple blade construction, felt edged with offset hinge pin, nylon bearings, blades linked and line voltage motor drive, power open.

2.4 AIR OUTLETS AND INLETS

A. Manufacturers:

1. Titus
2. Price
3. Metalaire

B. Ceiling Diffusers: Square stamped or spun, multi-core type diffuser to discharge air in 360 degree pattern, with sectoring baffles where indicated; radial opposed blade damper and equalizing grid; baked enamel off-white finish.

C. Registers/Grilles: Streamlined and individually adjustable blades, one-way or two-way deflection, baked enamel off-white finish.

2.5 FILTERS

A. Disposable Panel Filters: Fiber blanket, factory sprayed with flameproof, non-drip, non-volatile adhesive.

1. Nominal Size: 24 x 24 inches.
2. Thickness: 2 inch.
3. Casing: Cardboard frame with perforated metal retainer.
4. Performance Rating: 500 fpm face velocity.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify sizes of equipment connections before fabricating transitions.
- B. Verify rated walls are ready for fire damper installation.
- C. Verify ducts and equipment installation are ready for accessories.
- D. Check location of air outlets and inlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

3.2 INSTALLATION

- A. Metal Ducts: Install in accordance with SMACNA Duct Construction Standards - Metal and Flexible.
- B. Connect flexible ducts to metal ducts with liquid adhesive plus tape.
- C. Use crimp joints with or without bead for joining round duct sizes 8 inch and smaller with crimp in direction of airflow.

- D. Fiberglass Ducts: Install in accordance with SMACNA Fibrous Glass Duct Construction Standards.
- E. Install flexible connections immediately adjacent to fans and motorized equipment. Install flexible connections specified between fan inlet and discharge ductwork. Prevent flexible connectors being in tension while running.
- F. Install back-draft dampers on discharge of exhaust fans.
- G. Prevent passage of unfiltered air around filters by installing felt, rubber, or neoprene gaskets.
- H. Install filter gage static pressure tips upstream and downstream of filters. Mount filter gages on outside of filter housing or filter plenum, in accessible position. Adjust and level.
- I. Cut openings in ductwork to accommodate thermometers and controllers. Cut pitot tube openings for testing of systems, complete with metal can with spring device or screw to eliminate against air leakage.
- J. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
- K. Slope underground ducts to plenums or low pump out points at 1: 500. Install access doors for inspection. Coat buried ductwork with one coat and seams and joints with additional coat of asphalt base protective coating.
- L. At installer's option, fiberglass ductwork may be substituted for internally or externally insulated or non-insulated low-pressure sheet metal ductwork.
- M. During construction install temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- N. Install fire dampers at locations as indicated on Drawings. Install with perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.
- O. Access Doors: Install access doors at the following locations:
 - 1. Spaced every 50 feet of straight duct.
 - 2. Upstream of each elbow.
 - 3. Upstream of each reheat coil.
 - 4. Before and after each duct mounted filter.
 - 5. Before and after each duct mounted coil.
 - 6. Before and after each duct mounted fan.
 - 7. Before and after each automatic control damper.
 - 8. Before and after each fire damper, smoke damper or combination fire and smoke damper.
 - 9. Downstream of each VAV box.
 - 10. Install at locations for cleaning kitchen exhaust ductwork in accordance with NFPA 96.
- P. Access Door Sizes: Install minimum 8 x 8 inch size for hand access, 18 x 18 inch size for shoulder access. Review locations prior to fabrication.
 - 1. Mark access doors for fire and smoke dampers on outside surface, with minimum 1/2 inch high letters reading: FIRE/SMOKE DAMPER, SMOKE DAMPER, OR FIRE DAMPER.

- Q. Install fire dampers, combination fire and smoke dampers and smoke dampers at locations as indicated on Drawings. Install with required perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.
 - 1. Install smoke dampers and combination smoke and fire dampers in accordance with NFPA 92A.
 - 2. Install dampers square and free from racking with blades running horizontally.
 - 3. Do not compress or stretch damper frame into duct or opening.
 - 4. Handle damper using sleeve or frame. Do not lift damper using blades, actuator, or jack shaft.
- R. Install balancing dampers on duct take-off to diffusers and grilles and registers, regardless of whether dampers are specified as part of diffuser, or grille and register assembly.
- S. Paint ductwork visible behind air outlets and inlets matte black.
- T. Do not operate fans until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.
- U. Install fans with resilient mountings and flexible electrical leads.
- V. Install sheaves required for final air balance.
- W. Install safety screen where fan inlet or outlet is exposed.
- X. For outdoor ductwork, protect ductwork, ductwork supports, linings and coverings from weather.
- Y. Install fans with access to adjustable blade axial fan wheels for varying blade angle setting. Adjust blades for varying range of volume and pressure.

3.3 TESTING

- A. For ductwork designed for 3 inches w.c. above ambient, pressure test minimum 25 percent of ductwork after duct cleaning, but before duct insulation is applied or ductwork is concealed. Submit test report.
 - 1. Test in accordance with SMACNA HVAC Air Duct Leakage Test Manual.
 - 2. Maximum Allowable Leakage: In accordance with ICC IECC.

3.4 CONCEALED GREASE DUCT TESTING

- A. Prior to concealing, wrapping, or insulating grease ductwork, or placing grease duct in service, perform leakage test in accordance with IMC, in presence of authority having jurisdiction.
- B. Perform light test by pulling minimum 100 W light through duct and observing for light leaks at duct joints.
- C. Test complete extent of duct installed, including joint at which duct connects to exhaust hood.

END OF SECTION

SECTION 23 81 26 - SPLIT-SYSTEM AIR-CONDITIONERS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Air handling unit.
 - 2. Condensing unit.

1.2 SUBMITTALS

- A. Product Data: Submit data indicating:
 - 1. Cooling and heating capacities.
 - 2. Dimensions.
 - 3. Weights.
 - 4. Rough-in connections and connection requirements.
 - 5. Duct connections.
 - 6. Electrical requirements with electrical characteristics and connection requirements.
 - 7. Controls.
 - 8. Accessories.
- B. Manufacturer's Installation Instructions: Submit assembly, support details, connection requirements, and include start-up instructions.

1.3 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of controls installed remotely from units.
- B. Operation and Maintenance Data: Submit manufacturer's descriptive literature, operating instructions, installation instructions, and maintenance and repair data.

1.4 QUALITY ASSURANCE

- A. Performance Requirements: Energy Efficiency Rating (EER) not less than prescribed by ASHRAE 90.1 when used in combination with compressors and evaporator coils when tested in accordance with ARI.
- B. Cooling Capacity: Rate in accordance with ARI.
- C. Sound Rating: Measure in accordance with ARI 270.
- D. Insulation and adhesives: Meet requirements of NFPA 90A.

1.5 WARRANTY

- A. Furnish five year manufacturers warranty for compressors.

1.6 MAINTENANCE SERVICE

- A. Furnish service and maintenance of equipment for one year from Date of Substantial Completion. Include maintenance items as shown in manufacturer's operating and maintenance data, including filter replacements, fan belt replacement, and controls checkout and adjustments.

PART 2 PRODUCTS

2.1 SPLIT SYSTEM AIR CONDITIONING UNITS

- A. Product Description: Split system consisting of air handling unit and condensing unit including cabinet, evaporator fan, refrigerant cooling coil, compressor, refrigeration circuit, condenser, electric heating coil air filters, controls, air handling unit accessories, condensing unit accessories, and refrigeration specialties.

2.2 AIR HANDLING UNIT

- A. Cabinet:
 - 1. Panels: Constructed of galvanized steel with baked enamel finish. Access Panels: Located on both sides of unit. Furnish with duct collars on inlets and outlets.
 - 2. Insulation: Factory applied to each surface to insulate entire cabinet. ½ thick aluminum foil faced glass fiber with edges protected from erosion.
- B. Evaporator Fan: Forward curved centrifugal type, resiliently mounted with adjustable belt drive and high efficiency motor. Motor permanently lubricated with built-in thermal overload protection.
- C. Evaporator Coil: Constructed of copper tubes expanded onto aluminum fins. Factory leak tested under water. Removable, PVC construction, double-sloped drain pan with piping connections on both sides.
- D. Refrigeration System: refrigeration circuits controlled by factory installed thermal expansion valve.
- E. Electric Heating Coil: Helical nickel-chrome resistance wire coil heating elements with refractory ceramic support bushings easily accessible with automatic reset thermal cut-out, built-in contactors, galvanized steel frame, load fuses.
- F. Air Filters: 25 to 30 percent efficiency based on ASHRAE 52.1.
- G. Air Handling Unit Accessories:
 - 1. Vibration Isolators: Neoprene-in-shear type or spring type.

2.3 CONDENSING UNIT

- A. General: Factory assembled and tested air cooled condensing units, consisting of casing, compressors, condensers, coils, condenser fans and motors, and unit controls.

- B. Unit Casings: Exposed casing surfaces constructed of galvanized steel with manufacturer's standard baked enamel finish. Designed for outdoor installation and complete with weather protection for components and controls, and complete with removable panels for required access to compressors, controls, condenser fans, motors, and drives.
- C. Compressor: rotary type compressors, resiliently mounted, with positive lubrication, and internal motor overload protection.
- D. Condenser Coil: Constructed of copper tubing mechanically bonded to aluminum fins, factory leak and pressure tested.
- E. Controls: Furnish operating and safety controls including high and low pressure cutouts. Control transformer. Furnish magnetic contactors for compressor and condenser fan motors.
- F. Condenser Fans and Drives: Direct drive propeller fans statically and dynamically balanced. Wired to operate with compressor. Permanently lubricated ball bearing type motors with built-in thermal overload protection. Furnish high efficiency fan motors.
- G. Condensing Unit Accessories: Furnish the following accessories:
 - 1. Controls to provide low ambient cooling to 0 degrees F.
 - 2. Time delay relay.
 - 3. Anti-short cycle timer.
 - 4. Disconnect switch.
 - 5. Vibration isolators.
 - 6. Hot gas bypass kit.
 - 7. Coil with corrosion resistant coating capable of withstanding salt spray test of 1000 hours in accordance with ASTM B117.
 - 8. Condenser Coil Guard: Condenser fan openings furnished with PVC coated steel wire safety guards.
 - 9. Suction and discharge pressure gauges.
- H. Refrigeration specialties: Furnish the following:
 - 1. Charge of compressor oil.
 - 2. Holding charge of refrigerant.
 - 3. Replaceable core type filter drier.
 - 4. Liquid line sight glass and moisture indicator.
 - 5. Shut-off valves on suction and liquid piping.
 - 6. Liquid line solenoid valve.
 - 7. Charging valve.
 - 8. Oil level sight glass.
 - 9. Crankcase heater.
 - 10. Hot gas muffler.
 - 11. Pressure relief device.
- I. Refrigerant: Furnish charge of refrigerant.

2.4 CONTROLS

- A. Thermostat: 7 day programmable electronic space thermostat with single stage heating and single stage cooling with manual changeover and heating setback and cooling setup capability. Furnish system selector switch heat-off-cool.

2.5 ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Disconnect Switch: Factory mounted, non-fused type, interlocked with access door, accessible from outside unit, with power lockout capability.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify concrete pad for condensing unit is ready for unit installation.

3.2 INSTALLATION - AIR HANDLING UNIT

- A. Install air handling units on vibration isolators.
- B. Install floor mounted units on concrete housekeeping pads at least 3-1/2 inches high and 6 inches wider than unit.
- C. Connect air handling units to supply and return ductwork with flexible connections.
- D. Install condensate piping with trap and route from drain pan to condensate drainage system.
- E. Install components furnished loose for field mounting.

3.3 INSTALLATION - CONDENSING UNIT

- A. Install condensing units on vibration isolators.
- B. Install units on concrete foundations.
- C. Install refrigerant piping from unit to condensing unit. Install refrigerant specialties.
- D. Evacuate refrigerant piping and install initial charge of refrigerant.
- E. Install electrical devices furnished loose for field mounting.
- F. Install control wiring between air handling unit, condensing unit, and field installed accessories.
- G. Install connection to electrical power wiring in accordance with Division 26.

3.4 MANUFACTURER'S FIELD SERVICES

- A. Furnish initial start-up and shutdown during first year of operation, including routine servicing and checkout.

3.5 CLEANING

- A. Vacuum clean coils and inside of unit cabinet.
- B. Install new throwaway filters in units at Substantial Completion.
- C. Install temporary filters during construction period. Replace with permanent filters at Substantial Completion.

3.6 DEMONSTRATION

- A. Demonstrate air handling unit operation and maintenance.
- B. Demonstrate starting, maintenance, and operation of condensing unit.

3.7 PROTECTION OF FINISHED WORK

- A. Do not operate air handling units until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

END OF SECTION

SECTION 26 05 00 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes grounding electrodes and conductors; bonding methods and materials; conduit and equipment supports, anchors and fasteners; and nameplates and wire markers including firestopping.

1.2 SYSTEM DESCRIPTION

- A. Grounding systems use metal underground pipe or metal frame of building and driven ground rod as grounding electrodes. Grounding system connections use mechanical fasteners or exothermic welds.
- B. Select materials, sizes, and types of anchors, fasteners, and supports to carry loads of equipment and raceway, including weight of wire and cable in raceway. Anchor and fasten electrical products to building elements and finishes as follows:
 - 1. Concrete Structural Elements: Expansion anchors and preset inserts.
 - 2. Steel Structural Elements: Beam clamps, spring steel clips, steel ramset fasteners, and welded fasteners.
 - 3. Concrete Surfaces: Self-drilling anchors and expansion anchors.
 - 4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Toggle bolts and hollow wall fasteners.
 - 5. Solid Masonry Walls: Expansion anchors and preset inserts.
 - 6. Sheet Metal: Sheet metal screws.
 - 7. Wood Elements: Wood screws.
- C. Identify Electrical components as follows:
 - 1. Nameplate for each electrical distribution and control equipment enclosure.
 - 2. Wire marker for each conductor at panelboard gutters, pull boxes, and outlet and junction boxes.
- D. Firestopping: Conform to UL for fire resistance ratings and surface burning characteristics.
- E. Firestopping: Provide certificate of compliance from authority having jurisdiction indicating approval of materials used.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's catalog data for grounding electrodes and connections; for fastening components; and nameplates, labels, and markers.

PART 2 PRODUCTS

2.1 ROD ELECTRODES

- A. Product Description: Copper or copper-clad steel, 1/2 inch diameter rod electrode, 10 feet in length.

2.2 NAMEPLATES

- A. Product Description: Engraved three-layer laminated plastic nameplate, black letters on white background.

2.3 WIRE MARKERS

- A. Product Description: Cloth tape, split sleeve, or tubing type wire markers with circuit or control wire number permanently stamped or printed.

2.4 FIRESTOPPING

- A. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
 1. Silicone Firestopping Elastomeric Firestopping: silicone elastomeric compound and compatible silicone sealant.
 2. Foam Firestopping Compounds: component foam compound.
 3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
 4. Fiber Stuffing and Sealant Firestopping: fiber stuffing insulation with silicone elastomer for smoke stopping.
 5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
 6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.
 7. Firestop Pillows: Formed mineral fiber pillows.

2.5 FIRESTOPPING ACCESSORIES

- A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.
- B. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

PART 3 EXECUTION

3.1 EXISTING WORK

- A. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.
- B. Provide temporary wiring and connections to maintain existing systems in service during construction.
- C. When performing work on energized equipment or circuits, use personnel experienced and trained in similar operations.
- D. Remove, relocate, and extend existing installations to accommodate new construction.
- E. Repair adjacent construction and finishes damaged during demolition and extension work.

3.2 INSTALLATION

- A. Install rod electrodes at locations indicated.
- B. Fabricate supports from structural steel or formed steel members.
- C. Install sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.
- D. Install nameplate parallel to equipment lines. Secure nameplate to equipment front using screws or rivets.

3.3 INSTALLATION - FIRESTOPPING

- A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.

END OF SECTION

SECTION 26 05 19 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes building wire and cable, conduit and tubing, surface raceway, boxes, wiring devices, wiring connectors, and connections.

1.2 SYSTEM DESCRIPTION

- A. Wiring Products:
 - 1. Solid conductor for feeders and branch circuits 10 AWG and smaller.
 - 2. Stranded conductors for control circuits.
 - 3. Conductor not smaller than 12 AWG for power and lighting circuits.
 - 4. Conductor not smaller than 14 AWG for control circuits.
 - 5. Increase wire size in branch circuits to limit voltage drop to a maximum of 3 percent.
- B. Conductor sizes are based on copper unless indicated as aluminum or "AL." When aluminum conductor is substituted for copper conductor, size to match circuit requirements, terminations, conductor ampacity and voltage drop.
- C. Raceway and boxes are located as indicated on Drawings, and at other locations where required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's catalog information for each wiring device.

1.4 QUALITY ASSURANCE

- A. Provide wiring materials located in plenums with peak optical density not greater than 0.5, average optical density not greater than 0.15, and flame spread not greater than 5 feet (1.5 m) when tested according to NFPA 262.

PART 2 PRODUCTS

2.1 BUILDING WIRE

- A. Description: Single-conductor insulated wire.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation Temperature Rating: 90 degrees C.

- E. Insulation Material: Thermoplastic.
- 2.2 NONMETALLIC-SHEATHED CABLE
- A. Conductor: Copper.
 - B. Insulation Voltage Rating: 600 volts.
- 2.3 DIRECT BURIAL CABLE
- A. Conductor: Copper.
 - B. Insulation Voltage Rating: 600 volts.
 - C. Insulation Temperature Rating: 90 degrees C.
- 2.4 SERVICE ENTRANCE CABLE
- A. Conductor: Copper.
 - B. Insulation Voltage Rating: 600 volts.
- 2.5 ARMORED CABLE
- A. Conductor: Copper.
 - B. Insulation Voltage Rating: 600 volts.
 - C. Insulation Temperature Rating: 90 degrees C.
 - D. Insulation Material: Thermoplastic.
 - E. Armor Material: Steel or Aluminum.
 - F. Armor Design: Interlocked metal tape, Corrugated tube or Smooth tube.
- 2.6 METAL-CLAD CABLE
- A. Conductor: Copper.
 - B. Insulation Voltage Rating: 600 volts.
 - C. Insulation Temperature Rating: 90 degrees C.
 - D. Insulation Material: Thermoplastic.
 - E. Armor Material: Steel or Aluminum.
 - F. Armor Design: Interlocked metal tape, Corrugated tube or Smooth tube.

2.7 TERMINATIONS

- A. Terminal Lugs for Wires 6 AWG and Smaller: Solderless, compression-type copper.
- B. Lugs for Wires 4 AWG and Larger: Color-keyed, compression-type copper, with insulating sealing collars.

PART 3 EXECUTION

3.1 EXISTING WORK

- A. Remove exposed abandoned raceway, boxes, wire, and cable, including abandoned raceway and cable above accessible ceiling finishes.
- B. Disconnect abandoned circuits and remove raceway, wire, and cable. Remove abandoned boxes when connecting wire and cable is abandoned and removed. Install blank cover for remaining abandoned boxes.
- C. Maintain access to existing boxes and wiring connections remaining active and requiring access. Modify installation or install access panel.
- D. Extend existing circuits using materials and methods compatible with existing electrical installations.

3.2 INSTALLATION

- A. Route raceway and cable to meet Project conditions.
- B. Set wall mounted boxes at elevations to accommodate mounting heights indicated.
- C. Adjust box location prior to rough-in when required to accommodate intended purpose.
- D. Do not install flush mounting box back-to-back in walls; install boxes with minimum 24 inches separation.
- E. Install wall plates on flush-mounted switches, receptacles, and blank outlets.

END OF SECTION

SECTION 26 09 23 - LIGHTING CONTROL DEVICES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Switches.
 - 2. Occupancy sensors.

1.2 SUBMITTALS

- A. Shop Drawings: Indicate dimensioned drawings of lighting control system components and accessories.
 - 1. One Line Diagram: Indicating system configuration indicating panels, number and type of switches or devices.
 - 2. Include typical wiring diagrams for each component.
- B. Product Data: Submit manufacturer's standard product data for each system component.
- C. Manufacturer's Installation Instructions: Submit for each system component.

1.3 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record the following information:
 - 1. Actual locations of components and record circuiting and switching arrangements.
 - 2. Wiring diagrams reflecting field installed conditions with identified and numbered, system components and devices.
- B. Operation and Maintenance Data:
 - 1. Submit replacement parts numbers.
 - 2. Submit manufacturer's published installation instructions and operating instructions.
 - 3. Recommended renewal parts list.

1.4 QUALITY ASSURANCE

- A. Where indicated on drawings or required by applicable code, provide automatic shutoff for lighting inside building larger than 5000 square feet. Control shutoff by method conforming to ICC IECC.
- B. Where indicated on drawings or required by applicable code, provide automatic shutoff for lighting outside building. Control shutoff by method conforming to ICC IECC.

1.5 WARRANTY

- A. Furnish five year manufacturer warranty for components.

PART 2 PRODUCTS

2.1 SWITCHES

- A. Wall Switch: Industrial Grade non-pilot light toggle switches for overriding relays.

2.2 OCCUPANCY SENSOR

- A. Compatible with modular relay panels. Capable of being wired directly to Class [2] [2P] wiring without auxiliary components or devices.
- B. Separate sensitivity and time delay adjustments with LED indication of sensed movement. User adjustable time-delay: 30 seconds to 12 minutes.
- C. Furnish with manual override.
- D. Operation: Silent.
- E. Room Sensors: As indicated on Drawings.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Use only properly color coded, stranded wire. Install wire sizes as indicated on Drawings.
- B. Label each low voltage wire clearly indicating connecting relay panel.
- C. Mount relay as indicated on Drawings. Wire numbered relays in panel to control power to each load. Install relays to be accessible. Allow space around relays for ventilation and circulation of air.
- D. Identify power wiring with circuit breaker number controlling load. When multiple circuit breaker panels are feeding into relay panel, label wires to indicate originating panel designation.
- E. Label each low voltage wire with relay number at each switch or sensor.

3.2 FIELD QUALITY CONTROL

- A. Furnish services for check, test, and start-up. Perform the following services:
 - 1. Check installation of panelboards.
 - 2. Test operation of remote controlled devices.
 - 3. Repair or replace defective components.
- B. Test each system component after installation to verify proper operation.
- C. Test switches after installation to confirm proper operation.

D. Confirm correct loads are recorded on directory card in each panel.

END OF SECTION

SECTION 26 20 00 - LOW-VOLTAGE ELECTRICAL TRANSMISSION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Enclosed switches and circuit breakers.
 - 2. Panelboards.
 - 3. Fuses.

1.2 SUBMITTALS

- A. Product Data: Submit catalog data showing products with specified features.

1.3 MAINTENANCE MATERIAL SUBMITTALS

- A. Spare Parts
 - 1. Furnish three spare fuses of each Class, size, and rating installed.
- B. Extra Stock Materials
 - 1. Furnish two of each panelboard key.

PART 2 PRODUCTS

2.1 ENCLOSED FUSIBLE SWITCH

- A. Description: NEMA KS 1, with externally operable handle interlocked to prevent opening front cover with switch in ON position, enclosed load interrupter knife switch. Handle lockable in OFF position.
- B. Materials:
 - 1. Fuse clips: Designed to accommodate NEMA FU 1, Class [R] [J] fuses.
 - 2. Enclosure: NEMA KS 1, Type to meet conditions.

2.2 ENCLOSED NONFUSIBLE SWITCH

- A. Description: NEMA KS 1, Type GD with externally operable handle interlocked to prevent opening front cover with switch in ON position, enclosed load interrupter knife switch. Handle lockable in OFF position.
- B. Materials:
 - 1. Enclosure: NEMA KS 1, Type to meet conditions.

2.3 MOLDED CASE CIRCUIT BREAKER

- A. Description: Enclosed, molded-case circuit breaker conforming to UL 489.

- B. Materials:
 - 1. Enclosure: UL 489, Type to meet conditions.

2.4 MANUAL MOTOR CONTROLLER

- A. Description: NEMA ICS 2, AC general-purpose, Class A, manually operated, full-voltage controller with overload element, red pilot light, and push button operator.
- B. Materials:
 - 1. Enclosure: NEMA ICS 6, Type to meet conditions of installation.

2.5 FRACTIONAL-HORSEPOWER MANUAL MOTOR CONTROLLER

- A. Description: NEMA ICS 2, AC general-purpose, Class A, manually operated, full-voltage controller for fractional horsepower induction motors, with thermal overload unit, red pilot light, and toggle operator.
- B. Materials:
 - 1. Enclosure: NEMA ICS 6, Type to meet conditions of installation.

2.6 AUTOMATIC MOTOR CONTROLLERS

- A. Description: NEMA ICS 2, AC general-purpose Class A controller for induction motors rated in horsepower.
- B. Operation:
 - 1. Control Voltage: 120 volts, 60 Hertz.
- C. Materials:
 - 1. Product Options and Features:
 - a. Cover Mounted Pilot Devices: NEMA ICS 5, standard duty type.
 - b. Pilot Device Contacts: NEMA ICS 5, Form Z, rated A150.
- D. Assembly:
 - 1. Combination Controllers: Combine motor controllers with disconnect in common enclosure, using motor circuit protector conforming to UL 489, with integral instantaneous magnetic trip in each pole. Obtain IEC Class 2 coordinated component protection.
 - 2. Combination Controllers: Combine motor controllers with disconnect in common enclosure, using fusible switch conforming to NEMA KS 1, enclosed knife switch with externally operable handle. Fuse clips: Designed to accommodate NEMA FU 1, fuses. Obtain IEC Class 2 coordinated component protection.
 - 3. Enclosure: NEMA ICS 6, Type to meet conditions of installation.

2.7 GENERAL PURPOSE CONTACTORS

- A. Description: NEMA ICS 2, AC general purpose magnetic contactor.
- B. Operation:
 - 1. Coil operating voltage: 120 volts, 60 Hertz.

- C. Materials:
 1. Poles: To match circuit configuration and control function.
 2. Cover Mounted Pilot Devices: NEMA ICS 5, standard-duty type with Form Z contacts, rated A150.
- D. Assembly [or]Fabrication:
 1. Combination Contactors: Combine contractors with thermal magnetic circuit breaker conforming to UL 489, with integral thermal and instantaneous magnetic trip in each pole.
 2. Combination Contactors: Combine contactors with enclosed knife switch conforming to NEMA KS 1, with externally operable handle and fuse clips designed to accommodate NEMA FU 1, fuses.
 3. Enclosure: NEMA ICS 6, Type to meet conditions.

2.8 LIGHTING CONTACTORS

- A. Description: NEMA ICS 2, magnetic lighting contactor.
- B. Materials:
 1. Poles: To match circuit configuration and control function.
 2. Contact Rating: Match branch circuit overcurrent protection, considering derating for continuous loads.
 3. Cover Mounted Pilot Devices: NEMA ICS 5, standard-duty type with Form Z contacts, rated A150.
- C. Assembly:
 1. Combination Contactors: Combine contractors with thermal magnetic circuit breaker conforming to UL 489, with integral thermal and instantaneous magnetic trip in each pole.
 2. Combination Contactors: Combine contactors with enclosed knife switch conforming to NEMA KS 1, with externally operable handle and fuse clips designed to accommodate NEMA FU 1, fuses.
 3. Enclosure: NEMA ICS 6, Type to meet conditions.

2.9 DISTRIBUTION PANELBOARDS

- A. Description: NEMA PB 1, circuit breaker type panelboard.
- B. Operation:
 1. Controllers:
 - a. Control Voltage: 120 volts, 60 Hertz.
 - b. Cover Mounted Pilot Devices: NEMA ICS 5, standard duty type.
 - c. Pilot Device Contacts: NEMA ICS 5, Form Z, rated A150.
- C. Materials:
 1. Panelboard bus: Copper.
- D. Assembly:
 1. Fusible Switch Assemblies: NEMA KS 1, quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle. Furnish interlock to prevent opening front cover with switch in ON position. Handle lockable in OFF position. Fuse clips: Designed to accommodate NEMA FU 1, fuses.

2. Molded Case Circuit Breakers: UL 489, circuit breakers with integral thermal and instantaneous magnetic trip in each pole. Furnish circuit breakers UL listed as Type HACR for air conditioning equipment branch circuits.
3. Controllers: NEMA ICS 2, AC general-purpose Class A controller for induction motors rated in horsepower.
4. Enclosure: NEMA PB 1, Type to meet conditions.

E. Finishes

1. Cabinet Front: Manufacturer's standard enamel.

2.10 BRANCH CIRCUIT PANELBOARDS

A. Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panelboard.

B. Material:

1. Panelboard Bus: **Copper**.

C. Assembly:

1. Molded Case Circuit Breakers: UL 489, thermal magnetic trip circuit breakers, with common trip handle for poles, listed as Type SWD for lighting circuits, Type HACR for air conditioning equipment circuits, Class A ground fault interrupter circuit breakers where scheduled. Provide UL Class 760 arc ault interrupter circuit breakers as indicated on Drawings. Do not use tandem circuit breakers.
2. Enclosure: NEMA PB 1, Type to meet conditions.
3. Cabinet Front: concealed trim clamps, concealed hinge, metal directory frame, and flush lock keyed alike.

D. Finishes

1. Cabinet Front: Manufacturer's standard enamel.

2.11 FUSES

A. Description:

1. Dimensions and Performance: NEMA FU 1, Class as specified or as indicated on Drawings.

B. Operation:

1. Voltage: Rating suitable for circuit phase-to-phase voltage.

PART 3 EXECUTION

3.1 DEMOLITION

A. Disconnect abandoned distribution equipment. Remove abandoned enclosures and boxes.

B. Maintain access to existing distribution equipment remaining active and requiring access. Modify installation or provide access panel.

3.2 INSTALLATION

- A. Install distribution equipment plumb.
- B. Select and install overload heater elements in motor controllers to match installed motor characteristics.
- C. Install panelboards in accordance with NEMA PB 1.1.
- D. Install recessed panelboards flush with wall finishes.
- E. Provide typed or neatly handwritten circuit directory for each branch circuit panelboard.

3.3 ADJUSTING

- A. Adjust operating mechanisms for free mechanical movement.
- B. Torque bolted bus connections in accordance with manufacturer's instructions after placing switchgear.

3.4 CLEANING

- A. Clean existing distribution equipment to remain or to be reinstalled.

3.5 DEMONSTRATION

- A. Demonstrate operation of switches, circuit breakers, motor controllers.

END OF SECTION

SECTION 26 50 00 - LIGHTING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes interior luminaires, lamps, ballasts, and accessories.

1.2 SUBMITTALS

- A. Product Data: Submit dimensions, ratings, and performance data.

PART 2 PRODUCTS

2.1 LUMINAIRES

- A. Product Description: Complete luminaire assemblies, with features, options, and accessories as indicated on Drawings.
- B. Substitutions: **Permitted.**
- C. Minimum Efficacy, Lamps Greater Than 100 Watts: 60 lumens/W, except where otherwise indicated or permitted by applicable code.

2.2 EMERGENCY LIGHTING UNITS

- A. Product Description: Self-contained incandescent emergency lighting unit.
- B. Lamps: 12 watt minimum, sealed beam type in nickel or chrome plated steel housing.
- C. Remote Fixtures: Match fixtures on unit.
- D. Indicators: Lamps to indicate AC ON and RECHARGING.
- E. TEST switch: Transfers unit from external power supply to integral battery supply.
- F. Input Voltage: 120 volts.

2.3 EXIT SIGNS

- A. Input Voltage: 120 volts.
- B. Lamps: 5 W per side, maximum.

PART 3 EXECUTION

3.1 EXISTING WORK

- A. Disconnect and remove abandoned luminaires, lamps, poles, and accessories.
- B. Extend existing luminaire installations using materials and methods compatible with existing installations.
- C. Clean and repair existing luminaires to remain or to be reinstalled.

3.2 INSTALLATION

- A. Install suspended luminaires using pendants supported from swivel hangers.
- B. Locate recessed ceiling luminaires as indicated on Drawings.
- C. Install surface mounted ceiling luminaires plumb and adjust to align with building lines and with each other. Secure to prevent movement.

3.3 ADJUSTING

- A. Aim and adjust luminaires.
- B. Relamp luminaires, lighting units, and exit signs with failed lamps at Substantial Completion.

END OF SECTION

SECTION 27 00 00 - COMMUNICATIONS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes arrangement with Telephone Utility Company for service and premises telephone pathways, and premises wiring including firestopping.

1.2 SYSTEM DESCRIPTION

- A. Firestopping: Conform to UL for fire resistance ratings and surface burning characteristics.
- B. Firestopping: Provide certificate of compliance from authority having jurisdiction indicating approval of materials used.

1.3 SUBMITTALS

- A. Product Data: Submit catalog data for each termination device, cable, and outlet device.

PART 2 PRODUCTS

2.1 TELEPHONE OUTLET JACKS

- A. Product Description: Conform to EIA/TIA 568 requirements for cable connectors for specific cable types.

2.2 BACKBONE CABLE

- A. Product Description: EIA/TIA 570, 100-ohm, unshielded twisted pair cable with 25 pairs, 22 AWG copper conductor.

2.3 HORIZONTAL CABLE

- A. Product Description: EIA/TIA 570, 100-ohm, unshielded twisted pair cable with 4 pairs, 24 AWG copper conductor.

2.4 FIRESTOPPING

- A. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
 - 1. Silicone Firestopping Elastomeric Firestopping: silicone elastomeric compound and compatible silicone sealant.
 - 2. Foam Firestopping Compounds: foam compound.
 - 3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.

4. Fiber Stuffing and Sealant Firestopping: Composite of mineral or ceramic fiber stuffing insulation with silicone elastomer for smoke stopping.
5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.
7. Firestop Pillows: Formed mineral fiber pillows.

2.5 FIRESTOPPING ACCESSORIES

- A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.
- B. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

PART 3 EXECUTION

3.1 EXISTING WORK

- A. Remove exposed abandoned telephone cables and pathways[, including abandoned cables and pathways above accessible ceiling finishes]. Cut flush with walls and floors, and patch surfaces.
- B. Disconnect and remove abandoned telephone equipment.
- C. Maintain access to existing telephone equipment, cabling, and terminations and other installations remaining active and requiring access. Modify installation or provide access panel.
- D. Extend existing telephone installations using materials and methods compatible with existing installations.
- E. Clean and repair existing telephone equipment to remain or to be reinstalled.

3.2 INSTALLATION

- A. Install pathways in accordance with EIA/TIA 569.
- B. Install wire and cable in accordance with EIA/TIA 570.
- C. Finish paint termination backboards with durable white enamel prior to installation of telephone equipment.
- D. Install termination backboards plumb, and attach securely to building wall at each corner. Install cabinet trim plumb.
- E. Install pull wire or polyethylene pulling string in each empty telephone conduit over 10 feet in length or containing bend.

3.3 INSTALLATION - FIRESTOPPING

- A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.

END OF SECTION