

SECTION 00020 - NOTICE TO CONTRACTORS

Sealed bids to be filed with the City Clerk's Office will be publicly opened by the City Clerk in the Council Chambers located in Gulf Breeze City Hall, 1070 Shoreline Drive, Gulf Breeze, FL 32561, on the date and times listed below for the construction of the following project:

GULF BREEZE COMMUNITY CENTER ADDITION AND RENOVATIONS

800 SHORELINE DRIVE, GULF BREEZE, FLORIDA

BID DOCUMENTS: Plans and specifications may be obtained from Bay Design Associates Architects, 720 Bayfront Parkway, Suite 200, Pensacola, FL 32502 Attn: Steve Jernigan (Telephone: 850-432-0706 Ext. 102, email: steve@baydesign.com) for a deposit of one hundred dollars (\$100.00). Drawings and specifications shall be provided in PDF format on CD to General Contractors only. Subcontractors/suppliers may purchase CD for \$20. Deposit shall be returned only to those Contractors submitting a bona-fide bid.

BID OPENING: JUNE 30, 2011, 2:00 p.m., LOCAL TIME.

PRE-BID CONFERENCE: **A MANDATORY PRE-BID CONFERENCE** at the Gulf Breeze Recreation Facility, 800 Shoreline Drive, Gulf Breeze, FL 32561 will be held on Thursday, June 9, 2011, 9:00 a.m. local time. Bids will not be accepted from any Contractor not represented at the pre-bid meeting. Subcontractors/suppliers may attend the conference.

SUBCONTRACTORS: A complete list of subcontractors to be used for this project shall be submitted to the City Clerk's Office by the low bidder no later than 11:00 a.m. local time on the day following the bid date and time listed above.

BONDS AND INSURANCE: Each bid shall include a certified check or bid bond in the amount of five percent (5%) of the base bid as a guarantee that the successful bidder, if awarded the contract, will within ten (10) consecutive calendar days after notice, enter into a written contract with the City of Gulf Breeze in accordance with the accepted bid and furnish: one hundred percent (100%) performance, labor, material and supply payment bond; a certificate of workers' compensation and liability insurance with required riders; required proof of State, County and City Contractor's licenses and proof of all risk Builder's Risk Insurance with the City of Gulf Breeze, FL named as co-insured. Contractor shall provide Owner's and Contractor's Protective Liability Policy naming the City of Gulf Breeze, FL as the insured. The performance bond shall extend as a guarantee bond for one (1) year after acceptance of the building. No bidder may withdraw his bid for a period of forty-five (45) consecutive calendar days commencing from the next regular scheduled City Council meeting without the consent of the Owner.

PUBLIC ENTITY CRIMES: A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property as contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold

Community Center Addition and Renovations
Gulf Breeze, Florida

amount provided in Section 287.017, Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list. The Owner reserves the right to waive formalities in bidding and reject any and all bids.

PLAN REVIEW: Plans and specifications may also be reviewed at the Pensacola Dodge Plan Room.

END OF SECTION 00020

SECTION 00100 - INSTRUCTION TO BIDDERS

- 1.1 **BID FORMS:** The Proposal Form is included in these specifications. Separate Proposal Forms will be furnished to prospective bidders upon request.

Bid documents shall be sealed and clearly labeled with the words "Bid Documents", the project name, name of bidder and date and time of opening so as to guard against premature opening of any bid.

The Owner may consider as non-conforming any bid on which there is an alteration of or departure from the Proposal Form hereto attached.

The Bid shall be based upon the completion of the Work according to the contract documents, together with all addenda thereto, under the lowest proposal submitted by a responsive bidder.

- 1.2 **UTILIZATION OF SUBCONTRACTORS:** By the end of the normal business hours for the Owner on the day of bid opening, the bidder shall submit a complete list of all subcontractors he intends to utilize to perform the work under the contract. Licensure of subcontractors is specified under paragraph 3.

- 1.3. **LICENSURE:** In accordance with Chapter 489.113, Florida Statutes, all individuals or entities engaging in and providing construction services shall be licensed in the State of Florida for that activity. This license requirement includes general and sub-contractors.

Failure to submit required proof of license shall be cause for Owner to reject bid as non-responsive, and award bid to second lowest qualified bidder.

- 1.4. **INTERPRETATION:** No oral interpretation will be made to any bidder as to the meaning of the drawings or specifications. Every interpretation made to a bidder will be in the form of an addendum to the specifications. Addenda will be furnished to each bidder, but it shall be the bidder's responsibility to make inquiry as to addenda issued. All such addenda shall become part of the contract and all bidders shall be bound by such addenda whether or not received by the bidders.

- 1.5. **FAMILIARITY WITH LAWS:** It is the bidder's responsibility to be familiar with all Federal, State and local laws, ordinances, rules and regulations that in any manner, affect the work. Ignorance thereof of the part of the bidder will in no way relieve him from responsibility.

- 1.6 **PERMITS AND INSPECTIONS:** It is the bidder's responsibility to obtain necessary permits and inspections from either the county or city inspection departments.

- 1.7. **EXAMINATION OF DOCUMENTS AND SITE:** Before submitting his proposal, bidder shall visit the site of the proposed work and familiarize himself with the nature and extent of the work and any local conditions that may in any manner affect the work to be done and the equipment, materials, and labor required. He shall also examine the drawings, specifications, and other contract documents to inform himself thoroughly regarding any and all conditions and requirements that may in any manner affect the work to be performed under the contract.

- 1.8 **RIGHT TO REJECT PROPOSAL:** The Owner reserves the right to reject any or all proposals, to

Community Center Addition and Renovations
Gulf Breeze, Florida

waive technical errors, and to accept any bids in part.

- 1.9. TIME OF COMPLETION: The successful bidder will be required to complete the project within the time stated in the Proposal Form and General Conditions. Projects are bid as group and it is expected that the successful Contractor will have the manpower capabilities to work on the projects concurrently. The completion time listed in the Contract Documents is for completion of all projects.
- 1.10. FORM OF AGREEMENT: The Contract form is included as part of the bid document shall be "Standard Form of Agreement Between Owner and Contractor" as attached.
- 1.11. BID GUARANTEE: The bidder's proposal shall be accompanied by a bid bond, cashier's check or certified check in the amount of 5% of the total of the bid and drawn in favor of the Owner. Such bid bond or check is given with the understanding and agreement that it guarantees: (1) that the bidder will not withdraw his bid for period of 45 consecutive calendar days commencing from the next regularly scheduled Board Meeting without the consent of the Owner; (2) that, if his bid is accepted, the bidder will enter into the written Contract with the Owner and furnish the required insurance certificates, and insurance within 10 consecutive days after receipt of notice of acceptance of his bid. In the event the bidder fails to comply with any of these conditions and requirements in whole or in part, the full amount of the bond or check shall be automatically forfeited to the Owner as damages on account of the default of the bidder. Within seven days after formal opening of bids, bid bonds and checks shall be returned to all except the three lowest bidders. The bid bonds or checks of the lowest bidders will be returned within three days after the execution of the Contract and submission to and approval by the Owner of all documentation and executed bonds.
- 1.12. SECURITY: The Contractor shall be responsible for having the job superintendent present wherever subcontractors are working in connection with the Contractor's basic contract.
- 1.13. SAFETY: The Contractor and subcontractors shall coordinate with Owner's representatives and provide any and all equipment, materials, safety devices and manpower necessary during construction to satisfy this requirement.
- 1.14. PROJECT SEQUENCING: Refer to Section 01100.
- 1.15. CERTIFICATES FOR PAYMENT: Each project must have its own schedule and schedule of values submitted each month. A single application with all three projects is not acceptable. Contractor shall consider each project as a separate entity. This procedure is to accommodate the Owner's bookkeeping requirements.

END OF SECTION 00100

SECTION 00310 - PROPOSAL FORM

(To be submitted on Contractors Letterhead)

City of Gulf Breeze
City Clerk
1070 Shoreline Drive
Gulf Breeze, Florida 32561

Date: JUNE 30, 2011

Time: 2:00 p.m. local time

City Clerk:

The undersigned Contractor, hereinafter called "Bidder", proposes to furnish all labor and material for **GULF BREEZE COMMUNITY CENTER ADDITION AND RENOVATIONS** for the City of Gulf Breeze, Gulf Breeze, Florida, hereinafter called the "Owner", in accordance with the drawings and specifications prepared by Bay Design Associates Architects, and in full accordance with instructions to bidders, contract and construction documents relating thereto on file in the office of the Recreational Facilities Director for the sum of:

Base Bid:

Base Bid 1: _____ Dollars

(\$ _____).

For Alternate Bid items see Section 01230, "Alternates".

Alternate No. 1 (Deduct) _____ Dollars

(\$ _____).

Alternate No. 2 (Deduct) _____ Dollars

(\$ _____).

Alternate No. 3 (Deduct) _____ Dollars

(\$ _____).

Alternate No. 4 (Deduct) _____ Dollars

(\$ _____).

Alternate No. 5 (Deduct) _____ Dollars

(\$ _____).

Community Center Addition and Renovations
Gulf Breeze, Florida

Alternate No. 6 (Deduct)_____Dollars
(\$_____).

Alternate No. 7 (Deduct)_____Dollars
(\$_____).

Alternate No. 8 (Add) _____Dollars
(\$_____).

Alternate No. 9 (Deduct)_____Dollars
(\$_____).

There is enclosed a Bid Bond (for Base Bid amount only) in the amount of \$_____ payable to the Owner, the required bid deposit, as a guarantee and for the purposes set out in the Instructions to Bidders and Notice to Contractors for bids.

The Bidder hereby agrees that the above proposal shall remain in full force and effect for a period of forty-five (45) calendar days commencing from the next regularly scheduled City Council Meeting and that the Bidder will not revoke or cancel this proposal or withdraw from the competition within said 45 day period, and that in the event the contract is awarded to this Bidder, he will, within ten (10) consecutive calendar days after it is awarded, enter into written contract with the Owner in accordance with the accepted bid and give a contract performance bond with good and sufficient sureties satisfactory to the Owner in the amount of 100% of the accepted bid and give a payment bond in accordance with Florida Statute 255.05; and that in the event of Bidder's default or breach of any said agreement, said bid deposit shall be forfeited to Owner as liquidated damages.

The Bidder further agrees, that if awarded the contract, to substantially complete said work in accordance with the dates set forth **Section 00100, Instructions to Bidders, paragraph 1.15** after receiving a written Notice to Proceed, and finally complete work within Forty Five (45) calendar days after Substantial Completion of each phase. Liquidated damages shall be assessed against the final payment in the amount of two hundred and fifty dollars (\$500.00) for each consecutive calendar day the Contractor is late in achieving Substantial Completion and three hundred dollars (\$300.00) for each consecutive calendar day the Contractor is late in achieving Final Completion.

Acknowledgment is hereby made of receipt of the following addenda issued during the bidding period:

Addendum No._____ Dated _____

Community Center Addition and Renovations
Gulf Breeze, Florida

Addendum No. _____ Dated _____

Bidder (signed): _____

Title: _____

NOTE:

The following form for the List of Subcontractors and the Public Entity Crimes forms shall be submitted to the Owner by the successful bidder only no later than 11:00 a.m. on the day following the bid opening.

SUBCONTRACTORS
(Submit on Contractor's Letterhead)

City of Gulf Breeze
City Clerk
1070 Shoreline Drive

Date: _____

Community Center Addition and Renovations
Gulf Breeze, Florida

Gulf Breeze, Florida 32561

The undersigned, hereinafter called "Bidder", lists below the names of the subcontractors who will perform the phase of the work indicated:

Phase Of Work	Name of Subcontractor	License Number
Masonry		
Roofing		
Plumbing		
Mechanical		
Electrical		
Kitchen Equipment		

The Contractor declares that he has fully investigated each subcontractor listed and has received and has in his files, evidence that each subcontractor maintains a fully equipped organization capable, technically and financially, of performing the pertinent work, and that he has made similar installations in a satisfactory manner.

Bidder (signed) _____

Title _____

SWORN STATEMENT PURSUANT TO SECTION 287.133(3)(a),
FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED AND SWORN TO IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS.

1. This sworn statement is submitted to The City of Gulf Breeze, FL
by _____
(print the individual's name and title)
for _____
(print name of entity submitting sworn statement)
whose business address is _____
and (if applicable) its Federal Employer Identification Number (FEIN) is: _____
(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement: _____)
2. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to an directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or of the United States, including, but not limited to, any agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to changes brought by indictment or information after July 1, 1997, as a result of a jury verdict, non jury trial, or entry of a plea of guilty or nolo contendere.
4. I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), Florida Statutes, means:
 1. A predecessor or successor of a person convicted of a public entity crime; or
 2. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.
5. I understand that a "person" as defined in Paragraph 287.133(1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

6. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Indicate which statement applies)

_____ Neither the entity submitting this sworn statement, nor any of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, nor any affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1997.

_____ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public crime subsequent to July 1, 1997.

_____ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1997. However, there has been a subsequent proceeding before a Hearing Officer of the State of Florida, Division of Administrative Hearings and Final Order entered by the Hearing Officer determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (Attach a copy of the final order)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH I (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUTES FOR A CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

Signature

Sworn to a subscribed before me this _____ day of _____ in the year 2011.

Personally known _____

OR produced identification _____

(Type of Identification

Notary Public-State of _____

My commission expires _____

(Printed typed or stamped
commissioned name of notary

Community Center Addition and Renovations
Gulf Breeze, Florida

public)

SECTION 00410 – OWNER / CONTRACTOR AGREEMENT FORM

PART 1 GENERAL

1.1 CONDITIONS AND REQUIREMENTS

- A. The “Owner / Contractor Agreement” form , shall be as attached..

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

Community Center Addition and Renovations
Gulf Breeze, Florida

AGREEMENT

This Agreement is made and entered into as of the First (1st) day of March 2011, by and between the CITY OF GULF BREEZE, a Florida municipal corporation, 1070 Shoreline Drive, Gulf Breeze, Florida 32562, ("City"), and _____ ("Contractor") (who herein may individually be referred to as a "Party" or collectively as the "Parties"), to perform all work ("Work") in connection with construction of Community Center Addition and Renovations, Shoreline Park, Gulf Breeze, FL ("Project"), as said Work is set forth in the Plans and Specifications prepared by Bay Design Associates Architects, PL ("Architect") and other Contract Documents hereafter specified.

SECTION I. CONTRACT DOCUMENTS.

A. The Contract Documents consist of this Agreement, the Exhibits described in Section VI hereof, Addenda, Change Orders, Field Orders and amendments relating thereto. All of the foregoing Contract Documents are incorporated by reference and made a part of this Agreement (all of said documents including this Agreement sometimes being referred to herein as the "Contract Documents" and sometimes as the "Agreement"). A copy of the Contract Documents shall be maintained by Contractor at the Project site at all times during the performance of the Work.

B. City shall furnish to the Contractor a CD of the Contract Documents for execution of the Work. Additional copies of the Contract Documents shall be furnished, upon request, at the cost of reproduction.

SECTION II. SCOPE OF WORK.

A. **General.** Contractor will provide all services required for the proper construction of the Project.

B. Responsibilities of Contractor With Respect to Construction.

(1) The Contractor will provide all construction supervision, inspection, labor, materials tools construction equipment and subcontracted items necessary for the execution and completion of the Project.

(2) The Contractor will pay all sales, use, gross receipts and similar taxes related to the Work provided by the Contractor which have been legally enacted at the time of execution of this Agreement and for which the Contractor is liable.

(3) The Contractor will prepare and submit for the City's approval an estimated Progress Schedule for the Project. The Progress Schedule shall indicate the dates for the starting and completion of the various stages of the construction. It shall be revised as required by the conditions of the Work and those unforeseen conditions and events which are beyond the Contractor's control.

(4) The Contractor shall keep such full and detailed accounts as may be necessary for the proper financial management under this Agreement. The system shall be

Community Center Addition and Renovations
Gulf Breeze, Florida

satisfactory to the City who shall be afforded access to all of the Contractor's records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda and similar data relating to this Agreement. The Contractor shall preserve all such records for a period of three (3) years after the final payment or longer where required by law.

C. Royalties and Patents.

The Contractor shall pay all royalties and license fees for materials, methods and systems incorporated in the work. The Contractor shall defend all suits or claims for infringement of any patent rights and shall save the City harmless from loss on account thereof except when a particular design process or product is specified by the City. In such case the Contractor shall be responsible for such loss only if he has reason to believe that the design, process or product so specified is an infringement of a patent, and fails to give such information promptly to the City.

D. Warranties and Completion.

In addition to the warranties set forth in Section 20 of the General Terms and Conditions ("Exhibit A") (hereafter "General Conditions"):

(1) The Contractor will secure required certificates of inspection, testing or approval and deliver them to the City;

(2) The Contractor will collect all written warranties and equipment manuals and deliver them to the City; and

(3) The Contractor, with the assistance of the City's maintenance personnel, will direct the checkout of utilities and operations of systems and equipment for readiness, and will assist in their initial start-up and testing.

SECTION III. CONTRACT AMOUNT.

In consideration of the faithful performance by Contractor of the covenants in this Agreement to the full satisfaction and acceptance of City, City agrees to pay, or cause to be paid, to Contractor the following amount (herein "Contract Amount"), in accordance with the terms of this Agreement:

SECTION IV. BONDS.

A. Contractor shall provide Performance and Payment Bonds, in the forms prescribed in Exhibits B and C, in the amount of one hundred percent (100%) of the Contract Amount, the costs of which to be paid by Contractor. The Performance and Payment Bonds shall be underwritten by a surety authorized to do business in the State of Florida and otherwise acceptable to the City; provided, however, the surety shall be rated as "A" or better and Class XII or higher rating as to financial size category and the amount required shall not exceed two percent (2%) of the reported policy holders' surplus, all as reported in the most current Best Key Rating Guide, published by A.M. Best Company, Inc. of 75 Fulton Street, New York, New York 10038.

Community Center Addition and Renovations
Gulf Breeze, Florida

B. If the surety for any bond furnished by Contractor is declared bankrupt, becomes insolvent, its right to do business is terminated in the State of Florida, or it ceases to meet the requirements imposed by the Contract Document, the Contractor shall, within five (5) calendar days thereafter, substitute another bond and surety, both of which shall be subject to the City's approval.

C. As per Florida Statutes, Section 255.05, the Contractor shall be required to execute and record the Performance and Payment Bonds. The bonds must state the name and principal business address of both the Principal and the Surety and a description of the Project sufficient to identify it.

SECTION V. CONTRACT TIME AND LIQUIDATED DAMAGES.

A. Time is of the essence in the performance of the Work under this Agreement. The "Commencement Date" shall be established in the Notice to Proceed to be issued by the City. Contractor shall commence the Work within five (5) calendar days from the Commencement Date. No Work shall be performed at the Project site prior to the Commencement Date. Any Work performed by the Contractor prior to the Commencement Date shall be at the sole risk of the Contractor. The Work shall be substantially completed as follows:

The Work shall be fully completed and ready for final acceptance by the City within forty five (45) calendar days from the Substantial Completion Date (herein "Contract Time"). No work under this contract shall commence until certificates of insurance (see Section 12.2, et seq., of the General Conditions) have been received and acknowledged by the City.

B. City and Contractor recognize that, since time is of the essence for this Agreement, City will suffer financial loss if the Work is not substantially completed within the time specified above, as said time may be adjusted as provided for herein. Should Contractor fail to substantially complete the Work within the time period noted in Paragraphs A.1 and A.2, above, City shall be entitled to assess, as liquidated damages, but not as a penalty, five hundred dollars (\$500.00) for each calendar day thereafter until substantial completion is achieved. The Project shall be deemed to be substantially completed on the date the City and County issue a Substantial Completion Certificate pursuant to the terms hereof. Further, liquidated damages in the amount of three hundred dollars (\$300.00) shall be assessed for each calendar day after the substantial completion date until final completion is achieved.

C. Contractor hereby expressly waives and relinquishes any right which it may have to seek to characterize the above noted liquidated damages as a penalty, which the Parties agree represents a fair and reasonable estimate of the City's actual damages at the time of contracting if Contractor fails to substantially complete the Work in a timely manner.

D. When any period of time is referenced by days herein, it shall be computed to exclude the first day and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a holiday for the City employees, such day

Community Center Addition and Renovations
Gulf Breeze, Florida

shall be omitted from the computation, and the last day shall become the next succeeding day which is not a Saturday, Sunday or such holiday.

SECTION VI. EXHIBITS INCORPORATED.

The following documents are expressly agreed to be incorporated by reference and made a part of this Agreement:

(TBD)

SECTION VII. DEFINITIONS.

Wherever used in the Contract Documents, the following terms shall have the meanings indicated and shall be applicable to both the singular and plural thereof:

As-Built -- A complete set of marked-up Drawings showing field changes and actual installed conditions. This also includes valve references with no less than two (2) distances to permanent objects.

Change Orders -- A written order to the Contractor, in the form set forth in Exhibit A.G, @ authorizing an addition, deletion, or revision in the Work within the general scope of the Contract Documents, or authorizing an adjustment in the Contract Amount or the Contract Time.

Construction Phase -- The period during which construction of the Project occurs

Drawings -- The portions of the Contract Documents referenced in Exhibit 'I,' which show the characteristics and scope of the Work to be performed and which have been prepared or approved by the Architect.

Field Order -- A written order effecting a change in the Work not involving an adjustment in the Contract Amount or an extension of the Contract Time, issued by the Architect to the Contractor during construction.

Shop Drawings -- All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, a Subcontractor, manufacturer, supplier or distributor, which illustrate how specified portions of the Work shall be fabricated or installed.

Specifications -- The portions of the Contract Documents set forth in Exhibit "I," consisting of written descriptions of a technical nature of materials, equipment, construction systems, and workmanship.

Subcontractor -- An individual, firm, or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of a portion of the Work at the site.

Substantial Completion -- The date certificated by the City and County when the construction of the Project is sufficiently completed, in accordance with the Contract Documents, so that the Project can be utilized for the purposes for which it is intended.

Community Center Addition and Renovations
Gulf Breeze, Florida

Work -- All labor and services necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in the Project.

Work Directive Change -- A written directive issued by the City or the Architect to the Contractor changing the scope of the Work.

SECTION VIII. NOTICES.

A. All notices, communications, reports, applications, or other written documents required or made pursuant to this Agreement by the Contractor to the City shall be in writing and delivered by hand or by United States Postal Service Department, first class mail, postage pre-paid, return receipt requested, addressed to the following:

Edwin A. Eddy, City Manager
City of Gulf Breeze
1070 Shoreline Drive
Gulf Breeze, Florida 32561

Additionally Contractor shall provide a copy thereof to:

Bay Design Associates Architects
720 Bayfront Parkway
Suite 200
Pensacola, FL 32502

B. All notices required or made pursuant to this Agreement by City to Contractor shall be made in writing and shall be delivered by hand or United States Postal Service Department, first class, mail, postage pre-paid, return receipt requested, addressed to the following:

C. Either Party may change its above stated address by giving written notice to the other Party in accordance with the requirements of this Section.

SECTION IX. MISCELLANEOUS.

A. Modifications. No modification or change to this Agreement shall be valid or binding upon the Parties unless in writing and executed by the Parties.

B. Successors and Assigns. Subject to other provisions hereof, this Agreement shall be binding upon and shall inure to the benefit of the Parties, and their successors and assigns.

C. Governing Law. This Agreement shall be interpreted under and its performance

Community Center Addition and Renovations
Gulf Breeze, Florida

governed by the laws of the State of Florida.

D. No Waiver. The failure of the City to enforce at any time or for any period of time any one or more of the provisions of this Agreement shall not be construed to be and shall not be a waiver of any such provision or provisions or of its right thereafter to enforce each and every such provision. Any custom or practice of the Parties in variance with the terms of this Agreement shall not constitute a waiver of the aggrieved Party's right to demand strict compliance with the terms of this Agreement.

E. Entire Agreement. The Parties agree and represent that this Agreement comprises the full and entire agreement between the Parties affecting the Work contemplated herein, and no other agreement or understanding of any nature concerning the same has been entered into or will be recognized, and that all negotiations, acts, work performed, or payments made prior to the execution hereof shall be deemed merged in, integrated and superseded by this Agreement.

F. Severability. The invalidity, unenforceability or lawful rejection of any of the provisions of this Agreement shall not affect or impair the validity or enforceability of any other provision. To the extent any provision is invalid, unenforceable, or lawfully rejected, the Parties desire and hereby request the courts (or applicable regulatory authorities) to construe, reconstruct and/or reform this Agreement in a manner rendering this Agreement effective within the intent and purpose of this Agreement.

G. Attorneys' Fees. In connection with any dispute or litigation arising under, from, as a result of, or out of this Agreement, the Parties agree that the prevailing Party in such dispute or litigation shall be entitled to recover all costs and expenses incurred (including those incurred in any appeals from any litigation and enforcement of judgment), including reasonable attorneys' fees and fees for the service of other professionals, para-professionals and similar persons.

H. Counterparts. This Agreement may be executed simultaneously in one or more counterparts, each of which shall be deemed an original and all of which together shall constitute one and the same instrument.

I. Relationship of Parties. This Agreement is not intended, and shall not be construed, to create a partnership, joint venture or other similar relationship between the Parties.

J. Plurals/Gender. Whenever the context of this Agreement permits, the singular shall include the plural, and one gender shall include all.

K. Headings. The headings or captions set forth in this Agreement are for convenience only and are not to be construed as defining or limiting in any way the scope or intent of the provisions of this Agreement.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of date first set forth above.

Community Center Addition and Renovations
Gulf Breeze, Florida

By: _____
Signature

Its: _____

ATTEST:

Its: _____

CITY OF GULF BREEZE, FLORIDA,
a Florida municipal corporation,

By: _____
Beverly Zimmern, Mayor

ATTEST:

Marita Rhodes, City Clerk

EXHIBIT "A"

GENERAL TERMS AND CONDITIONS

1. INTENT OF CONTRACT DOCUMENTS.

1.1 It is the intent of the Contract Documents to describe a functionally complete project (or portion thereof) to be constructed in accordance with the Contract Documents. Any work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result shall be supplied whether or not specifically called for. When words which have a well known technical or trade meaning are used to described work, materials or equipment, such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association or to the laws or regulations of any governmental authority having jurisdiction over the Project, whether such reference be specific or by implication, shall mean the latest standard specification, manual code, law or regulation in affect at the time the Work is performed, except as may be otherwise specifically stated herein.

1.2 If during the performance of the Work Contractor discovers a conflict, error or discrepancy in the Contract Document, Contractor shall immediately report same to the City in writing and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification from the City.

1.3 Drawings are intended to show general arrangements, design and extent of Work and are not intended to serve as shop drawings. Specifications are separated into divisions for convenience of reference only and shall not be interpreted as establishing divisions for the Work, trades, subcontractors, or extent of any part of the Work. In the event of a discrepancy between or among the drawings, specifications or other Contract Document provisions, Contractor shall be required to comply with the provision which is the more restrictive or stringent requirement upon the Contractor, as determined by the City. Unless otherwise specifically mentioned, all anchors, bolts, screws, fittings, fillers, hardware, accessories, trim and other parts required in connection with any portion of the Work to make a complete, serviceable, finished and first quality installation shall be furnished and installed as part of the Work, whether or not called for by the Contract Documents.

1.4 The Contractor may be furnished with additional instructions and detailed drawings by the Architect as necessary to carry out the Work contemplated by the Contract Documents. The additional drawings and instructions thus supplied will become part of the Contract Documents. The Contractor shall carry out the Work in accordance with the additional detailed drawings and instructions and pursuant to the terms otherwise set forth in the Contract Documents.

1.5 In case of conflict between the Drawings and the Specifications, the Specifications shall govern. Figure dimensions on the Drawings shall govern over general drawings. Any discrepancies found between the Drawings and the Specifications and site conditions or any inconsistencies or ambiguities in the Drawings or Specifications shall immediately be reported by Contractor to the City and the Architect. The Architect shall

Community Center Addition and Renovations
Gulf Breeze, Florida

promptly correct such inconsistencies or ambiguities in writing. Work done by the Contractor after discovery of such discrepancies, inconsistencies or ambiguities shall be done at the Contractor's risk.

2. INVESTIGATION AND UTILITIES.

2.1 Contractor shall have the sole responsibility of satisfying itself concerning the nature and location of the Work and the general and local conditions, and particularly, but without limitation, with respect to the following: those affecting transportation, access, disposal, handling and storage of materials; availability and quality of labor; water and electric power; availability and condition of roads; work area; living facilities; climatic conditions and seasons; physical conditions at the work-site and the Project area as a whole; topography and ground surface conditions; nature and quality of the surface materials to be encountered; equipment and facilities needed preliminary to and during performance of the Work; and all other costs associated with such performance. The failure of Contractor to acquaint itself with any applicable conditions shall not relieve Contractor from any of its responsibilities to perform under the Contract Documents, nor shall it be considered the basis for any claim for additional time or compensation.

2.2 Contractor shall locate all existing roadways, drainage facilities and utility services above, upon, or under the Project site, said roadway, drainage facilities and utilities being referred to in this Section 2 as the Utilities. Contractor shall contact the owners of all Utilities to determine the necessity for relocating or temporarily interrupting any Utilities during the construction of the Project. Contractor shall schedule and coordinate its Work around any such relocation or temporary service interruption. Contractor shall be responsible for properly shoring, supporting and protecting all Utilities at all times during the course of the Work.

2.3 The Contractor shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the City, by written notice, of:

2.3.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents; or

2.3.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

2.3.3 The City shall promptly investigate such conditions reported by Contractor, and if it is found that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the Work, an equitable adjustment shall be made and the Contract Documents shall be modified by a Change Order. Any claim of the Contractor for adjustment hereunder shall not be allowed unless the required written notice has been given, or if such notice is not given the Contractor shall be deemed to have waived the claim.

3. PROGRESS PAYMENTS.

3.1 Prior to commencing the Work, Contractor shall submit to City, for its

Community Center Addition and Renovations
Gulf Breeze, Florida

review and approval, a Schedule of Values based upon the Contract Price, listing the major elements of the Work and the dollar value for each element. After its approval by the City, this Schedule of Values shall be used as the basis for the Contractor's Applications for Payment. The Schedule of Values and any payments to Contractor as a result thereof, shall be based upon the stipulated lump sums stated in Section III Contract Amount of this Agreement. The schedule shall be updated and submitted along with a completed and notarized copy of the Application for Payment form attached to the Agreement as Exhibit "F."

3.2 Prior to submitting its first monthly Application for Payment, Contractor shall submit to City a complete list of all its proposed Subcontractors and materialmen, showing the work and materials involved and the dollar amount of each proposed subcontract and purchase order. The first Application for Payment shall be submitted no earlier than thirty (30) days after Commencement Date.

3.3 If payment is requested on the basis of materials and equipment not incorporated into the Project, but delivered and suitably stored at the site or at another location agreed to by the City in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that upon payment by City, the City shall receive the materials and equipment free and clear of all liens, charges, security interests and encumbrances, together with evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect City's interest therein, all of which shall be subject to the City's prior written approval.

3.4 Contractor shall submit two (2) copies of each of its Applications for Payment, to the City on or before the 25th day of each month for work performed during the previous month. One of the said Applications for Payment shall be sent directly to Edwin A. Eddy, City Manager, City of Gulf Breeze, 1070 Shoreline Drive, Gulf Breeze, Florida 32561, and the other Application for Payment shall be sent directly to the Architect, Bay Design Associates Architects, 720 Bayfront Parkway, Suite 200, Pensacola, FL 32502. Invoices received after the 25th day of each month shall be considered for payment as part of the next month's application. Within ten (10) calendar days after receipt of each Application for Payment, the City shall either: (i) indicate approval of the requested payment; (ii) indicate approval of only a portion of the requested payment, stating in writing the reasons therefor; or (iii) return the Application for Payment to the Contractor indicating, in writing, the reason for refusing to approve payment. In the event of a total denial and return of the Application for Payment by the City, the Contractor may make the necessary corrections and resubmit the Application for Payment. The City shall, within thirty (30) days calendar days after City's approval of an Application for Payment, pay the Contractor the amounts so approved. Provided, however, in no event shall the City be obligated to pay an amount greater than that portion of the Application for Payment approved by the City.

3.5 The City shall retain ten percent (10%) of the gross amount of each payment request or ten percent (10%) of the portion thereof approved by the City for payment, whichever is less. Such sum shall be accumulated and not released to Contractor until final payment is due. Any interim interest on such sums shall accrue to the City.

3.6 Interim, periodic and/or monthly payments to Contractor shall in no way

Community Center Addition and Renovations
Gulf Breeze, Florida

imply approval or acceptance of Contractor's work.

3.7 Each Application for Payment shall be accompanied by a Release and Affidavit, in the form attached as Exhibit "E," showing that all materials, labor, equipment and other bills associated with that portion of the Work for which payment is being requested have been paid in full. The City shall not be required to make payment until and unless these affidavits are furnished by Contractor.

4. PAYMENTS WITHHELD.

4.1 The City may decline to approve any Application for Payment, or portions thereof, because of subsequently discovered evidence or subsequent inspections. The City may nullify the whole or any part of any approval for payment previously issued and City may withhold any payments otherwise due Contractor under this Agreement or any other agreement between City and Contractor, to such extent as may be necessary in the City's opinion to protect it from loss because of: (a) defective Work not remedied; (b) third party claims filed or reasonable indication of the probable filing of such claims; (c) failure of Contractor to make payment properly to Subcontractors or for labor, materials or equipment; (d) reasonable doubt that the Work can be completed for the unpaid balance of the Contract Amount; (e) reasonable indication that the Work will not be completed within the Contract Time; (f) unsatisfactory prosecution of the Work by the Contractor; or (g) any other material breach of the Contract Documents. If these conditions are not remedied or removed, the City may, after three (3) days written notice, rectify the same at Contractor's expense. The City also may offset against any sums due Contractor the amount of any liquidated or unliquidated obligations of Contractor to the City, whether relating to or arising out of this Agreement or any other agreement between Contractor and City.

5. FINAL PAYMENT.

5.1 City shall make final payment to Contractor within thirty (30) calendar days after the Work is finally inspected and accepted by the City in accordance with Subsection 19.1, below, of these General Conditions, provided that Contractor first, and as an explicit condition precedent to the accrual of Contractor's right to final payment, shall have furnished City with a properly executed and notarized copy of the Release and Affidavit attached as Exhibit "E," as well as a duly executed copy of the Surety's consent to final payment and such other documentation that may be required by the Contract Documents or the City.

5.2 Contractor's acceptance of final payment shall constitute a full waiver of any and all claims by Contractor against City arising out of this Agreement or otherwise relating to the Project, except those previously made in writing and identified by Contractor as unsettled at the time of the final Application for Payment. Neither the acceptance of the Work nor payment by the City shall be deemed to be a waiver of City's right to enforce any obligations of Contractor hereunder or to the recovery of damages for defective Work not discovered by the City at the time of final inspection.

6. SUBMITTALS AND SUBSTITUTIONS.

Community Center Addition and Renovations
Gulf Breeze, Florida

6.1 Contractor shall carefully examine the Contract Documents for all requirements for approval of materials to be submitted such as shop drawings, data, test results, schedules and samples. Contractor shall submit such materials at its own expense and in such form as required by the Contract Documents in sufficient time to prevent any delay in the delivery of such materials and the installation thereof.

6.2 Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other suppliers may be accepted by the City if sufficient information is submitted by Contractor to allow the City to determine that the material or equipment proposed is equivalent or equal to that named. Requests for review of substitute items of material and equipment will not be accepted by the City from anyone other than Contractor and all such requests must be submitted by Contractor to the City within thirty (30) calendar days after Notice of Award is received by Contractor.

6.3 If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall make application to the City for acceptance thereof, certifying that the proposed substitution shall perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application shall state that the evaluation and acceptance of the proposed substitute will not prejudice Contractor's achievement of substantial completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with the City for the Project) to adapt the design to the proposed substitute, and whether or not incorporation or use by the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service shall be indicated. The application also shall contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs for redesign and claims of other contractors affected by the resulting change, all of which shall be considered by the City in evaluating the proposed substitute. The City may require Contractor to furnish at Contractor's expense additional data about the proposed substitute.

6.4 If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to the City, if Contractor submits sufficient information to allow the City to determine that the substitute proposed is equivalent or superior to that indicated or required by the Contract Documents. The procedures for submission to and review by the City shall be those provided herein for substitute materials and equipment.

6.5 The City shall be allowed a reasonable time within which to evaluate each proposed substitute. The City shall be the sole judge of acceptability, and no substitute will be ordered, installed, or utilized without the City's prior written acceptance which shall be evidenced by either a Change Order or an approved Shop Drawing. The City may require

Community Center Addition and Renovations
Gulf Breeze, Florida

Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute. The City shall charge Contractor and may deduct from payments due Contractor all expenses incurred by the City in connection with review, evaluation and analysis of the proposed substitution, such expenses to include but not be limited to expenses incurred by the City for review by the Architect of the proposed substitute.

7. DAILY REPORTS, AS-BUILTS AND MEETINGS.

7.1 Unless waived in writing by the City, during the Construction Phase the Contractor shall complete and submit to the City on a weekly basis a daily log of the Contractor's work for the preceding week in a format approved by the City. The daily log shall document all activities of Contractor at the Project site including, but not limited to, the following:

7.1.1 Weather conditions showing the high and low temperatures during work hours, the amount of precipitation received on the Project site, and any other weather conditions which adversely affect the Work;

7.1.2 Soil conditions which adversely affect the Work;

7.1.3 The hours of operation by Contractor's and Subcontractors' personnel;

7.1.4 The number of Contractor's and Subcontractors' personnel present and working at the Project site, by subcontract and trade;

7.1.5 All equipment present at the Project site, description of equipment used and designation of time equipment was used (specifically indicating any down time);

7.1.6 Description of Work being performed at the Project site;

7.1.7 Any unusual or special occurrences at the Project site;

7.1.8 Materials received at the Project site; and

7.1.9 A list of all visitors to the Project site.

The daily log shall not constitute nor take the place of any notice required to be given by Contractor to City pursuant to the Contract Documents.

7.2 Contractor shall maintain in a safe place at the Project site one record copy of the Contract Documents, as well as all Shop Drawings and other Contractor submittals and all written interpretations and clarifications issued by the City, in good order and annotated to show all changes made during the construction. The annotated drawings shall be continuously updated by the Contractor throughout the prosecution of the Work to accurately reflect all filed changes that are made to adapt the Work to field conditions, changes resulting from Change Orders, Work Directive Changes and Field Orders, and all concealed and buried installations of piping, conduit, and utility services. All buried and concealed items, both inside

Community Center Addition and Renovations
Gulf Breeze, Florida

and outside the Project site, shall be accurately located on the annotated drawings as to depth and in relationship to not less than two (2) permanent features. The annotated drawings shall be clean and all changes, corrections and dimensions shall be given in a neat and legible manner in a contrasting color. The As-Built record documents, together with all approved samples and a counterpart of all approved shop drawings shall be available to City for reference. Upon completion of the Work, and as a condition precedent to Contractor's entitlement to final payment, these As-Built record documents, samples, and shop drawings shall be delivered to City by Contractor for the City's use and possession.

7.3 Contractor shall keep all records and supporting documentation which concern or relate to the Work hereunder for a minimum of five (5) years from the date of termination of this Agreement or the date the Project is completed, whichever is later. City, or any duly authorized agents or representatives of the City, shall have the right to audit, inspect and copy all such records and documentation as often as they deem necessary during the period of this Agreement and during the five (5) year period noted above; provided, however, such activity shall be conducted only during normal business hours.

8. CONTRACT TIME AND TIME EXTENSIONS.

8.1 Contractor shall diligently pursue the completion of the Work and coordinate the Work being done on the Project by its Subcontractors and materialmen, as well as coordinating its Work with all work of others at the Project site, so that its Work or the work of others shall not be delayed or impaired by any act or omission of Contractor. Contractor shall be solely responsible for all construction means, methods, techniques, sequences and procedures, as well as coordination of all portions of the Work under the Contract Documents.

8.2 Should Contractor be obstructed or delayed in the prosecution of or completion of the Work as a result of unforeseeable causes beyond the control of Contractor, and not due to its fault or neglect, including but not restricted to acts of God, acts of government, fires, floods, epidemics, quarantine regulations, strikes or lockouts, Contractor shall notify the City in writing within forty-eight (48) hours after the commencement of such delay, stating the cause or causes thereof, or be deemed to have waived any right which Contractor may have had to request a time extension.

8.3 No interruption, interference, inefficiency, suspension or delay in the commencement or progress of the Work from any cause whatever, including those for which City may be responsible, in whole or in part, shall relieve Contractor of his duty to perform or give rise to any right to damages or additional compensation from City. Contractor expressly acknowledges and agrees that it shall receive no damages for delay. Contractor's sole remedy, if any, against City will be the right to seek an extension to the Contract Time; provided, however, the granting of any such time extension shall not be a condition precedent to the aforementioned ~~No Damage For Delay~~ provision. This paragraph shall expressly apply to claims for early completion, as well as to claims based on late completion.

9. CHANGES IN THE WORK.

9.1 City shall have the right at any time during the progress of the Work to

Community Center Addition and Renovations
Gulf Breeze, Florida

increase or decrease the Work. Promptly after being notified of a change, Contractor shall submit an itemized estimate of any cost or time increases or savings it foresees as a result of the change. Except in an emergency endangering life or property, or as expressly set forth herein, no addition or changes to the Work shall be made except upon written order of City, and the City shall not be liable to the Contractor for any increased compensation without such written order. No officer, employee or agent of City is authorized to direct any extra or changed work orally.

9.2 A Change Order, in the form attached as Exhibit "G" to the Agreement, shall be issued and executed promptly after an agreement is reached between Contractor and City concerning the requested changes. Contractor shall promptly perform changes authorized by duly executed Change Orders. The Contract Amount and Contract Time shall be adjusted in the Change Order in the manner as City and Contractor shall mutually agree.

9.3 If City and Contractor are unable to agree on a Change Order for the requested change, Contractor shall, nevertheless, promptly perform the changes as directed in a written Work Directive Change. In that event, the Contract Amount and Contract Time shall be adjusted as directed by the City. If Contractor disagrees with the City's adjustment determination, Contractor must make a claim pursuant to Section 10, below, of these General Conditions or else be deemed to have waived any claim on this matter Contractor might otherwise have had.

9.4 In the event a requested change results in an increase to the Contract Amount, the amount of the increase shall be limited to the Contractor's reasonable direct labor and material costs and reasonable actual equipment costs as a result of the change (including allowance for labor burden costs) plus a maximum fifteen percent (15%) markup for all overhead and profit. In the event such change is performed by a Subcontractor, a maximum ten percent (10%) markup for all overhead and profit for all Subcontractors' and sub-subcontractors' direct labor and material costs and actual equipment costs shall be permitted, with a maximum markup of five percent (5%) for the General Contractor. All compensation due Contractor and any Subcontractors or sub-subcontractors for field and home office overhead is included in the markups noted above.

9.5 The City shall have the right to conduct an audit of Contractor's books and records to verify the accuracy of the Contractor's claim with respect to Contractor's costs associated with any Change Order.

9.6 The City shall have authority to order minor changes in the Work not involving an adjustment to the Contract Amount or an extension to the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes may be affected by Field Order or by other written order. Such changes shall be binding on the Contractor.

10. CLAIMS AND DISPUTES.

10.1 A Claim is a demand or assertion by one of the Parties seeking an adjustment or interpretation of the terms of the Contract Documents, payment of money, extension of time or other relief with respect to the terms of the Contract Documents. The term

Community Center Addition and Renovations
Gulf Breeze, Florida

A Claim also includes other disputes and matters in question between City and Contractor arising out of or relating to the Contract Documents. The responsibility to substantiate a Claim shall rest with the Party making the Claim.

10.2 Claims by the Contractor shall be made in writing to the City with a copy directly to the Architect, within forty-eight (48) hours after the first day of the event giving rise to such Claim or else the Contractor shall be deemed to have waived the Claim. Written supporting data shall be submitted to the City and the Architect within fifteen (15) calendar days after the occurrence of the event, unless the City grants additional time in writing, or else the Contractor shall be deemed to have waived the Claim. All claims shall be priced in accordance with the provisions of Subsection 9.4.

10.3 The Contractor shall proceed diligently with its performance as directed by the City, regardless of any pending Claim, action, suit or administrative proceeding, unless otherwise agreed to by the City in writing. The City shall continue to make payments in accordance with the Contract Documents during the pendency of any Claim.

11. OTHER WORK.

11.1 The City may perform other work related to the Project at the site by City's own forces, have work performed by utility owners or let other direct contracts. If the fact that such other work is to be performed is not noted in the Contract Documents, notice thereof will be given to Contractor. If Contractor believes that such performance will involve additional expense to Contractor or require additional time, Contractor shall send written notice of that fact to the City within forty-eight (48) hours of being notified of the other work. If the Contractor fails to send the above required forty-eight (48) hour notice, the Contractor will be deemed to have waived any rights it otherwise may have had to seek an extension to the Contract Time, an adjustment to the Contract Amount, or other modification of the Contract Documents.

11.2 Contractor shall afford each utility owner and other contractor (or City, if City is performing the additional work with City's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work and shall properly connect and coordinate its Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of the City and the others whose work will be affected.

11.3 If any part of the Contractor's Work depends for proper execution or results upon the work of any other contractor or utility owner (or City), Contractor shall inspect and promptly report to City in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. Contractor's failure to report will constitute an acceptance of the other work as fit and proper for integration with Contractor's Work.

12. INDEMNIFICATION AND INSURANCE.

Community Center Addition and Renovations
Gulf Breeze, Florida

12.1 Contractor agrees to save harmless, indemnify, and defend the City and its agents, officers, and employees from any and all claims, losses, penalties, interests, demands, judgments and costs of suit, including attorneys' fees and paralegals' fees, for any expense, damage or liability incurred by any of them, whether for personal injury, death, property damage, direct or consequential damages, or economic loss, including environmental impairment, arising directly or indirectly on account of or in connection with the Work done by Contractor under this Agreement or by any person, firm or corporation to whom any portion of the Work is subcontracted by Contractor or resulting from the use by Contractor, or by any one for whom Contractor is legally liable of any materials, tools, machinery or other property of the City. City and Contractor agree that the first \$100.00 of the Contract Amount paid by the City to Contractor shall be given as separate consideration for this indemnification, and any other indemnification of City by Contractor provided for within the Contract Documents, the sufficiency of such separate consideration being acknowledged by Contractor by Contractor's acceptance and execution of the Agreement. The Contractor's obligation shall not be limited by, or in any way to, any insurance coverage or by any provision in or exclusion or omission from any policy of insurance. The Contractor agrees to pay on behalf of the City, as well as provide a legal defense for the City, both of which will be done only if and when requested by the City, for all claims made. Such payment on the behalf of the City shall be in addition to any and all other legal remedies available to the City and shall not be considered to be the City's exclusive remedy.

12.2 Contractor shall obtain and carry, at all times during its performance under the Contract Documents, insurance of the types and in the amounts set forth in Exhibit AD@ to the Agreement. All insurance policies shall be from responsible companies duly authorized to do business in the State of Florida and/or responsible risk retention group insurance companies or trusts which are registered with the State of Florida. Foreign or off-shore insurance carriers are not acceptable for work under this contract unless admitted to the State of Florida. All commercial insurance carriers providing the Contractor with required insurance shall be "A" (excellent) rated with a minimum financial size category of "IX," according to the A.M. Best Key Rating Guide, latest edition. Within ten (10) calendar days after Notice of Award is received by Contractor and prior to the commencement of work, Contractor shall provide City with properly executed Certificates of Insurance to evidence Contractor's compliance with the insurance requirements of the Contract Documents. Said Certificates of Insurance shall be on forms approved by the City, such as "Acord Form 25." The Certificates of Insurance shall be signed by the authorized representatives of the insurance company/companies shown on the Certificates of Insurance, with proof that they are authorized representatives thereof. Certificates of Insurance shall be mailed to the City in care of Edwin A. Eddy, City Manager, 1070 Shoreline Drive, Gulf Breeze, Florida 32561. In addition, certified, true and exact copies of all insurance policies required hereunder shall be provided to the City, on a timely basis, when requested by the City.

12.3 The Certificates of Insurance and required insurance policies shall contain provisions that thirty (30) days prior written notice by registered or certified mail shall be given to the City of any cancellation, intent not to renew, or reduction in the policies or coverages.

Community Center Addition and Renovations
Gulf Breeze, Florida

12.4 All insurance coverages of the Contractor shall be primary to any insurance or self insurance program carried by the City applicable to this Project. The acceptance by City of any Certificate of Insurance does not constitute approval or agreement by the City that the insurance requirements have been satisfied or that the insurance policy shown on the Certificate of Insurance is in compliance with the requirements of the Contract Documents. No work shall commence at the Project site unless and until the required Certificates of Insurance are received by the City.

12.5 Contractor shall require each of its Subcontractors to procure and maintain, until the completion of the Subcontractor's work, insurance of the types and to the limits specified in Exhibit AD, @ unless such insurance requirements for the Subcontractor are expressly waived in writing by the City. All liability insurance policies, other than professional liability, worker's compensation and employer's liability policies, obtained by Contractor to meet the requirements of the Contract Documents shall name the City of Gulf Breeze as an additional insured and shall contain severability of interest provisions. The City shall also be designated as certificate holder with the address of 1070 Shoreline Drive, Gulf Breeze, Florida 32561. If any insurance provided pursuant to the Contract Documents expires prior to the completion of the Work, renewal Certificates of Insurance and, if requested by the City, certified, true copies of the renewal policies, shall be furnished by Contractor within thirty (30) days prior to the date of expiration. Upon expiration of an insurance policy term during the course of Work under the Agreement, succeeding insurance policies shall be consecutive to the expiring policy.

12.6 All liability policies shall be underwritten on the Aoccurrence@ basis, unless otherwise approved in writing by the City. "Claims made" policies, if approved by the City, and subsequent insurance certificates shall provide a Aretro-date@ which shall include the effective date of the Agreement. "Claims-made" renewals or carrier and policy replacements shall reflect the original "retro-date."

12.7 Should at any time the Contractor not maintain the insurance coverage required herein, the City may terminate the Agreement or at its sole discretion shall be authorized to purchase such coverage and charge the Contractor for such coverage purchased. The City shall be under no obligation to purchase such insurance, nor shall it be responsible for the coverages purchased or the insurance company or companies used. The decision of the City to purchase such insurance coverages shall in no way be construed to be a waiver of any of its rights under the Contract Documents.

12.8 Contractor shall submit to the City a copy of all accident reports arising out of any personal injuries, property damages or any other losses or damages arising or alleged to have arisen on account of any work by Contractor or Subcontractor under the Contract Documents.

12.9 Duty to Provide Legal Defense. The Contractor agrees to pay to the City, as well as provide a legal defense for the City, which shall include attorneys' fees and costs, both of which will be done only if and when requested by the City, for all claims as described in Subsection 12.1, above. Such payment on the behalf of the City shall be in addition to any and all other legal remedies available to the City and shall not be considered to be the City's exclusive remedy.

Community Center Addition and Renovations
Gulf Breeze, Florida

13. COMPLIANCE WITH LAWS.

13.1 Contractor agrees to comply, at its own expense, with all federal, state and local laws, codes, statutes, ordinances, rules, regulations and requirements applicable to the Project, including but not limited to those dealing with taxation, worker's compensation, equal employment and safety. If Contractor observes that the Contract Documents are at variance therewith, it shall promptly notify the City in writing. Compliance with the above laws shall include but is not limited to: (i) the Occupational Safety and Health Act, 29 CFR 1910 and 1926, respectively, General Industry Standards and Construction Industry Standards, including regulations regarding Trenching and Shoring; (ii) the Florida Worker's Compensation Law, Chapter 440, Florida Statutes; (iii) Chapters 38F and 38I, Florida Administrative Code; and (iv) Florida Department of Transportation Manual of Traffic Control and Safe Practices. Failure to adhere to the requirements of the above named laws and regulations regarding safety and traffic control shall be grounds for an immediate work stoppage, either by City staff or the Contractor, until the deficiency is corrected.

14. CLEANUP AND PROTECTIONS.

14.1 Contractor agrees to keep the Project site clean at all times of debris, rubbish and waste materials arising out of the Work. At the completion of the Work, Contractor shall remove all debris, rubbish and waste materials from and about the Project site, as well as all tools, appliances, construction equipment and machinery and surface materials, and shall leave the Project site clean and ready for use and occupancy by the City.

14.2 Any existing surface or subsurface improvements, including, but not limited to, pavements, curbs, sidewalks, pipes, utilities, footings, structures, trees and shrubbery, not indicated in the Contract Documents to be removed or altered, shall be protected by Contractor from damage during the prosecution of the Work. Any such improvements so damaged shall be restored by Contractor to the condition equal to or better than that existing at the time of Contractor's commencement of the Work.

15. ASSIGNMENT.

15.1 Contractor shall not assign the Agreement or any part thereof, without the prior consent in writing of the City. If Contractor does, with approval, assign the Agreement or any part thereof, it shall require that its assignee be bound to it and to assume toward Contractor all of the obligations and responsibilities that Contractor has assumed toward the City.

16. PERMITS, LICENSES AND TAXES.

16.1 All permits and licenses necessary for the prosecution of the Work shall be procured and paid for by Contractor. Contractor shall be responsible for notifying all permitting agencies when construction commences. If Contractor performs any Work without obtaining, or contrary to, such permits or licenses, Contractor shall bear all costs arising therefrom. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work.

Community Center Addition and Renovations
Gulf Breeze, Florida

16.2 Contractor shall pay all sales, consumer, use and other similar taxes associated with the Work or portions thereof, which are applicable during the performance of the Work.

16.3 City will have construction plans approved by the Florida Department of Environmental Protection, and the Florida Department of Transportation, as required. Contractor will be responsible for conforming with the requirements of these approvals.

17. TERMINATION FOR DEFAULT.

17.1. Contractor shall be considered in material default of the Agreement and such default shall be considered cause for the City to terminate the Agreement, in whole or in part, as further set forth in this Section 17, if Contractor: (i) fails to begin the Work under the Contract Documents within the time specified herein; (ii) fails to properly and timely perform the Work as directed by the City or as provided for in the approved Progress Schedule; (iii) performs the Work unsuitably or neglects or refuses to remove materials or to correct or replace such Work as may be rejected as unacceptable or unsuitable; (iv) discontinues the prosecution of the Work; (v) fails to resume Work which has been suspended within a reasonable time after being notified to resume Work; (vi) becomes insolvent or is declared bankrupt, or commits any act of bankruptcy; (vii) allows any final judgment to stand against it unsatisfied for more than ten (10) days; (viii) makes an assignment for the benefit of creditors; (ix) fails to obey any applicable codes, laws, ordinances, rules or regulations with respect to the Work; and/or (x) materially breaches any other provision of the Contract Documents.

17.2 City shall notify Contractor in writing of Contractor's default(s). If the City determines that Contractor has not remedied and cured the default(s) within seven (7) calendar days following receipt by Contractor of said written notice, then the City, at its option, without releasing or waiving its rights and remedies against the Contractor's sureties and without prejudice to any other right or remedy it may be entitled to hereunder or by law, may terminate all or any portion of the Work and any materials, tools, equipment, and appliances of Contractor, take assignments of any of Contractor's subcontracts and purchase orders, and complete all or any portion of Contractor's Work by whatever means, method or agency which the City, in its sole discretion, may choose.

17.3 If the City deems any of the foregoing remedies necessary, Contractor agrees that it shall not be entitled to receive any further payments hereunder until after the Project is completed. All monies expended and all of the costs, losses, damages, and extra expenses, including all management, administrative and other overhead and other direct and indirect expenses (including attorneys' fees) or damages incurred by the City incident to such completion, shall be deducted from the Contract Amount, and if such expenditures exceed the unpaid balance of the Contract Amount, Contractor agrees to pay promptly to City, on demand, the full amount of such excess, including costs of collection, attorneys' fee (including appeals) and interest thereon at the maximum legal rate of interest until paid. If the unpaid balance of the Contract Amount exceeds all such costs, expenditures and damages incurred by the City to complete the Work, such excess shall be paid to the Contractor. The amount to be paid to the Contractor or the City, as the case may be, and this obligation for payment shall survive

Community Center Addition and Renovations
Gulf Breeze, Florida

termination of the Agreement.

17.4 The liability of Contractor hereunder shall extend to and include the full amount of any and all sums paid, expenses and losses incurred, damages sustained, and obligations assumed by the City in good faith under the belief that such payments or assumptions were necessary or required, in completing the Work and providing labor, materials, equipment, supplies, and other items therefor or re-letting the Work, in settlement, discharge or compromise of any claims, demands, suits and judgments pertaining to or arising out of the Work hereunder.

17.5 If, after notice of termination of Contractor's right to proceed pursuant to this Section 17, it is determined for any reason that Contractor was not in default, or that its default was excusable, or that the City is not entitled to the remedies against Contractor provided herein, then Contractor's remedies against the City shall be the same as and limited to those afforded Contractor below under Subsection 18.1, below, regarding termination of the Agreement for convenience.

18. TERMINATION FOR CONVENIENCE AND RIGHT OF SUSPENSION.

18.1 The City shall have the right to terminate the Agreement without cause upon seven (7) calendar days written notice to Contractor. In the event of such termination for convenience, Contractor's recovery against City shall be limited to (i) that portion of the Contract Amount earned through the date of termination; (ii) any retainage withheld up to the date of termination, and (iii) actual out-of-pocket costs arising directly and solely from termination of this Agreement not to exceed under any circumstance five percent (5%) of that portion of the Contract Amount earned through the date of termination. Contractor shall not be entitled to any other or further recovery against the City, including, but not limited to, damages or any anticipated profit on portions of the Work not performed.

18.2 The City shall have the right to suspend all or any portions of the Work upon giving Contractor two (2) calendar days' prior written notice of such suspension. If all or any portion of the Work is so suspended, Contractor's sole and exclusive remedy shall be to seek an extension of time to its schedule in accordance with the procedures set forth in the Contract Documents. In no event shall the Contractor be entitled to any additional compensation or damages. Provided, however, if the ordered suspension exceeds three (3) months, the Contractor shall have the right to terminate the Agreement with respect to that portion of the Work which is subject to the ordered suspension.

19. COMPLETION.

19.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the City shall promptly make such inspection and, if it finds the work acceptable and fully performed under the Contract Documents, shall promptly issue a final Certificate of Payment, stating that, on the basis of observations and inspections, the Work has been completed in accordance with the terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor is due and payable. The final payment shall not become due and payable until Contractor submits: (i) the Release and Affidavit in the form attached as Exhibit "E;" (ii) consent

Community Center Addition and Renovations
Gulf Breeze, Florida

of surety to final payment, and (iii) if required by the City, other data establishing payment or satisfaction of all obligations, such as receipts, releases and waivers of liens, arising out of the Contract Documents, to the extent and in such form as may be designated by the City. The City reserves the right to inspect the Work and make an independent determination as to the Work's acceptability. Unless and until the City is completely satisfied, the final payment shall not become due and payable.

20. WARRANTY.

20.1 Contractor shall obtain and assign to the City all express warranties given to Contractor or any Subcontractors by any materialmen supplying materials, equipment or fixtures to be incorporated into the Project. Contractor warrants to the City that any materials and equipment furnished under the Contract Documents shall be new unless otherwise specified, and that all Work shall be of good quality, free from all defects and in conformance with the Contract Documents. Contractor further warrants to the City that all materials and equipment furnished under the Contract Documents shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturers, fabricators, suppliers or processors except as otherwise provided for in the Contract Documents. If, within one (1) year after final completion, any Work is found to be defective or not in conformance with the Contract Documents, Contractor shall correct it promptly after receipt of written notice from the City. Contractor shall also be responsible for and pay for replacement or repair of adjacent materials or Work which may be damaged as a result of such replacement or repair. These warranties are in addition to those implied warranties to which City is entitled as a matter of law.

21. TESTS AND INSPECTIONS.

21.1 The City, its representatives, agents, and employees, and any governmental agencies with jurisdiction over the Project shall have access at all times to the Work, whether the Work is being performed on or off of the Project site, for their observation, inspection and testing. Contractor shall provide proper, safe conditions for such access. Contractor shall provide the City with timely notice of readiness of the Work for all required inspections, tests or approvals.

21.2 If the Contract Documents or any codes, laws, ordinances, rules or regulations of any public authority having jurisdiction over the Project requires any portion of the Work to be specifically inspected, tested or approved, Contractor shall assume full responsibility therefor, pay all costs in connection therewith, and furnish to the City all required certificates of inspection, testing or approval. All inspections, tests or approvals shall be performed in a manner and by organizations acceptable to the City.

21.3 If any Work that is to be inspected, tested or approved is covered without written concurrence from the City, such work must, if requested by the City, be uncovered for observation. Such uncovering shall be at Contractor's expense unless Contractor has given the City notice of Contractor's intention to cover the same and the City has not acted with reasonable promptness to respond to such notice. If any Work is covered contrary to written directions from the City, such Work must, if requested by the City, be uncovered for City's

Community Center Addition and Renovations
Gulf Breeze, Florida

observation and be replaced at Contractor's sole expense.

21.4 The City shall charge to Contractor and may deduct from any payments due Contractor all Architecting and inspection expenses incurred by the City in connection with any overtime work; such overtime work consisting of any work during the construction period beyond the regular eight (8) hour day and for any work performed on Saturday, Sunday or holidays.

21.5 Neither observations by the City nor inspections, tests or approvals by others shall relieve Contractor from Contractor's obligations to perform the Work in accordance with the Contract Documents.

22. DEFECTIVE WORK.

22.1 Work not conforming to the requirements of the Contract Documents shall be deemed defective Work. If required by City, Contractor shall as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the defective Work has been rejected by the City, remove it from the site and replace it with undefective Work. Contractor shall bear all direct, indirect and consequential costs of such correction or removal (including, but not limited to fees and charges of Architects, architects, attorneys and other professionals) made necessary thereby, and shall hold City harmless for same.

22.2 Subject to the provisions of Section 21, above, if the City considers it necessary or advisable that covered Work be observed by the City or inspected or tested by others, Contractor, at City's request, shall uncover, expose or otherwise make available for observation, inspection, or tests as the City may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, Contractor shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction (including, but not limited to, fees and charges of Architects, engineers, attorneys and other professionals), and the City shall be entitled to an appropriate decrease in the Contract Amount. If, however, such Work is not found to be defective, Contractor shall be allowed an increase in the Contract Amount and/or an extension of the Contract Time, if any, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction.

22.3 If any portion of the Work is defective, or Contractor fails to supply sufficient skilled workers with suitable materials or equipment, or fails to finish or perform the Work in such a way that the completed Work will conform to the Contract Documents, the City may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the City to stop the Work shall not give rise to any duty on the part of the City to exercise this right for the benefit of Contractor or any other party.

22.4 Should the City determine, at its sole option, it is in the City's best interest to accept defective Work, the City may do so. Contractor shall bear all direct, indirect, and consequential costs attributable to the City's evaluation of and determination to accept defective Work. If such determination is rendered prior to final payment, a Change Order shall be executed evidencing such acceptance of such defective Work, incorporating the necessary

Community Center Addition and Renovations
Gulf Breeze, Florida

revisions in the Contract Documents and reflecting an appropriate decrease in the Contract Amount. If the City accepts such defective Work after final payment, Contractor shall promptly pay to the City an appropriate amount to adequately compensate the City for its acceptance of the defective Work.

22.5 If Contractor fails, within a reasonable time (which under most circumstances will be ten (10) days or less, but under no circumstance shall be greater than thirty (30) days) after the written notice from the City, to correct the defective Work or to remove and replace rejected defective Work as required by City, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any of the provisions of the Contract Documents, the City may, after seven (7) days' written notice to Contractor, correct and remedy any such deficiency. To the extent necessary to complete corrective and remedial action, the City may exclude Contractor from any or all of the Project site, take possession of all or any part of the Work, and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Project site and incorporate in the Work all materials and equipment stored at the Project site or for which the City has paid Contractor but which are stored elsewhere. Contractor shall allow the City, and its representatives, agents, and employees such access to the Project site as may be necessary to enable the City to exercise the rights and remedies under this Section. All direct, indirect and consequential costs of the City in exercising such rights and remedies shall be charged against Contractor, and a Change Order shall be issued, incorporating the necessary revisions to the Contract Documents, including an appropriate decrease to the Contract Amount. Such direct, indirect and consequential costs shall include, but not be limited to, fees and charges of Architects, architects, attorneys and other professionals, all court and arbitration costs, and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of Contractor's defective Work. Contractor shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by the City of the City's rights and remedies hereunder.

23. SUPERVISION AND SUPERINTENDENTS.

23.1 Contractor shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be responsible to see that the Work and the finished Work complies accurately with the Contract Documents. Contractor shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without prior written notice to the City except under extraordinary circumstances. The superintendent shall be Contractor's representative at the Project site and shall have authority to act on behalf of Contractor. All communications given to the superintendent shall be as binding as if given to the Contractor. The City shall have the right to direct Contractor to remove and replace its Project superintendent, with or without cause.

24. PROTECTION OF WORK.

Community Center Addition and Renovations
Gulf Breeze, Florida

24.1 Contractor shall fully protect the Work from loss or damage and shall bear the cost of any such loss or damage until final payment has been made. If Contractor, or any one for whom Contractor is legally liable, is responsible for any loss or damage to the Work, or other work or materials of the City or the City's separate contractors, Contractor shall be charged with the same, and any monies necessary to replace such loss or damage shall be deducted from any amounts due Contractor.

24.2 Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stress or pressures that will endanger it.

24.3 The Contractor shall at all times during construction activity control turbidity caused by construction related acts, by the placement of contamination curtains, haybales or suitable temporary erosion control barriers. The pumping and discharge of trench water shall be in accordance with all local, state and federal agencies which control such activities. Any permits for such activities shall be obtained by the Contractor.

25. EMERGENCIES.

25.1 In the event of an emergency affecting the safety or protection of persons or the Work or property at the Project site or adjacent thereto, Contractor, without special instruction or authorization from the City is obligated to act to prevent threatened damage, injury or loss. Contractor shall give the City written notice within forty-eight (48) hours after the occurrence of the emergency, if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If the City determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Change Order shall be issued to document the consequences of the changes or variations. If Contractor fails to provide the forty-eight (48) hour written notice noted above, the Contractor shall be deemed to have waived any right it otherwise may have had to seek an adjustment to the Contract Amount, an extension to the Contract Time, or other modification to the Contract Documents.

26. USE OF PREMISES.

26.1 Contractor shall confine all construction equipment, the storage of materials and equipment, and the operations of workers to the Project site and land and areas identified in and the permitted by the Contract Documents and other lands and areas permitted by law, rights of way, permits and easements, and shall not unreasonably encumber the Project site with construction equipment or other material or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or any land or areas contiguous thereto, resulting from the performance of the Work.

26.2 The Contractor shall store materials and equipment in areas designated by the City or the Architect. Any costs for additional storage shall be borne by the Contractor.

26.3 No signs or advertisements shall be displayed on the site or building

Community Center Addition and Renovations
Gulf Breeze, Florida

except with written consent of the City.

27. SAFETY.

27.1 Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

27.1.1 All employees of the Work and other persons and/or organizations who may be affected thereby;

27.1.2 All the Work, and materials and equipment to be incorporated therein, whether in storage on or off the Project site; and

27.1.3 Other property on Project site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and any underground structures or improvements not designated for removal, relocation or replacement in the Contract Documents.

27.2 Contractor shall comply with all applicable codes, laws, ordinances, rules and regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. Contractor shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of underground structures and improvements and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation or replacement of their property. Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as the Work is completed and final acceptance of same by the City has occurred.

27.3 Contractor shall designate a responsible representative at the Project site whose duty shall be the prevention of accidents. This person shall be Contractor's superintendent unless otherwise designated in writing by Contractor to the City.

27.4 To protect persons from injury and to avoid property damage, adequate barricades, construction signs, torches, red lanterns and guards shall be placed and maintained during progress of the Work and until it is safe for both pedestrian and vehicular traffic. Rules and regulations of local authorities regarding safety provisions shall be observed.

27.5 Trenching and earth work shall be conducted in a manner to cause the least interruption to traffic. Where traffic must cross open trenches, suitable bridges must be provided.

28. PROJECT MEETINGS.

28.1 Prior to the commencement of Work, the Contractor shall attend a preconstruction conference with the City to discuss the Progress Schedule, procedures for

Community Center Addition and Renovations
Gulf Breeze, Florida

handling shop drawings and other submittals, and for processing Applications for Payment, and to establish a working understanding among the Parties as to the Work. During the prosecution of the Work, the Contractor shall attend any and all meetings convened by the City with respect to the Project, when directed to do so by the City. Contractor shall have its Subcontractors and suppliers attend all such meetings (including the preconstruction conference) as may be directed by the City.

29. SCHEDULE OF WORK.

29.1 All Work shall be arranged and shall be carried out in such a manner so as to achieve substantial completion and otherwise complete the Work within the times required in the Contract Documents.

29.2 Excess noise and lighting should be minimized after 7:00 p.m.

29.3 Should the Contractor's work, through no fault of the Architect, the City, or other Contractors, fail to progress according to the Progress Schedule, and if, in the opinion of the City, the Work cannot be completed within the Contract Time, or if deemed necessary to protect this and adjoining work from damage, the Contractor shall work additional time over the established hours of work, including holidays, as required to meet the Progress Schedule without additional expense to the City.

29.4 The Contractor is required to furnish adequate manpower at the Project to complete the Work within the Contract Time and in the accordance with the Progress Schedule. Should payment of premium time, bonuses, or the like be necessary to attract sufficient manpower for the Project, such extra costs shall be borne by the Contractor without additional compensation from the City.

29.5 When so ordered, in writing, by the City or the Architect, whether to advance the Contract Time, or for any other reason for the City's benefit, the Contractor shall work overtime and/or additional shifts and shall be reimbursed by the City for Contractor's actual net premium costs of such overtime and/or shifts for ordered and so worked, including insurance and taxes applicable thereto, without other overhead or profit. Such costs and expenses shall be subject to audit by the City.

30. PROJECT LAYOUT AND CONTROL.

30.1 The City has provided suitable benchmarks and horizontal alignment. These items are shown on the Drawings. Any of these points which are disturbed or destroyed by the Contractor shall be replaced at the Contractor's expense.

30.2 Should the Contractor, in the course of the Work, find that the points, grades and levels which are shown upon the drawings are not conformable to the physical conditions of the locality at the Work, the Contractor shall immediately inform the Architect of the discrepancy between the actual physical conditions of the locality of the Work, and the points, grades and levels which are shown on the Drawings. No claims shall be made by the Contractor against the City for compensation or damages by reason of failure of the Architect to

Community Center Addition and Renovations
Gulf Breeze, Florida

represent upon said Drawings, the points, grades, and levels conformable to the actual physical conditions of the locality of the Work.

31. TESTING.

31.1 The Contractor will furnish and pay for the services of a qualified independent testing laboratory approved by the Architect to provide quality control, if required. It is the Contractor's responsibility to notify the Architect and testing laboratory as items become ready for testing. Retesting of all testing failures shall be at the Contractor's expense. The testing laboratory shall work under the direction of the Architect. Copies of reports of all tests shall be sent to the Contractor, the Architect and the City.

32. DISPOSAL OF WASTE MATERIALS.

32.1 No burial of waste materials will be permitted on the premises. The Contractor shall at all time keep the premises free from accumulations of waste material or debris caused by Contractor's employees or the Work, and shall remove same when necessary or required by the City or the Architect.

Community Center Addition and Renovations
Gulf Breeze, Florida

EXHIBIT "B"

PERFORMANCE BOND

BOND:_____

NOW ALL MEN BY THESE PRESENTS that _____,
as Principal, and _____, as Surety, located at _____
(business address) are held and firmly bound unto the City of Gulf Breeze, Florida ("City"), in the sum of _____ Dollars (\$_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has entered into a Agreement dated as of the _____ day of _____, 20____, with City for construction of the _____ - Project Number _____, in accordance with drawings and specifications, which Agreement is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS BOND is such that if the principal shall in all respects:

1. Well and faithfully perform and execute the said Agreement and the Work therein provided and guaranties the work therein provided, in all respects according to the Contract Documents as defined in the Contract, and according to the time and terms and conditions of the Contract;

2. Protect, indemnify, keep, and save harmless the City against all claims, liabilities, judgments, costs, damages, expenses, and attorneys' fees that may in any way accrue or come against the City arising out the work of the Principal, or that may in any way result from the act, carelessness, or neglect of the Principal, its agents, employees, workers, or Subcontractors, in any respect whatsoever, or that may result on account of any infringement of any patent, trademark, or copyright by reason of the materials, machinery, processes, devises, or apparatus used or furnished in the performance of the Agreement and during construction and after completion of the Work;

3. Perform the guarantees and warranties set forth in the Contract Documents, including guaranty of all Work and materials furnished under the Agreement for the time specified in the Contract;

4. Pay to the City any and all sums that may be due the City under the terms of the Agreement and specifications, or either of them, by reason of the default, forfeiture, cancellation, or abrogation of the Contract, or by reason of any liquidated damages, or by reason of any latent or patent defect in the Work; and

5. Pay all valid claims and demands whatsoever, and repay any over

Community Center Addition and Renovations
Gulf Breeze, Florida

payment;

Then this obligation is to be null and void, otherwise it is to remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Agreement or to the Work to be performed thereunder or the specifications accompanying it shall in any way affect the Surety's obligations on this Bond, and Surety hereby waives notice of any such change, extension of time, alteration, or addition to the terms of the Contract Documents. If extra work is necessary to complete the Project for which this Bond is offered, then the monetary consideration for such extra work will be added to the penal sum of this Bond. The Surety, for value received, further stipulates and agrees that it will pay the City all losses, damages, including delay or liquidated damages, if any (but nothing herein shall be construed as permitting delay damages), expenses, costs, and attorneys' fees, including appellate proceedings, that the City sustains because of a default by the Principal under the Contract. Actions on this Performance Bond may be brought at any time within five (5) years after the date of actual possession by the City, the date of issuance of a Certificate of Occupancy, or the date of abandonment of construction if the Project is not completed, whichever date is latest.

IN WITNESS WHEREOF, the Principal and the Surety have executed this instrument as of the _____ day of _____, 20__, the names and corporate seal of each corporate party being affixed hereto and the premises duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, Sealed and
Delivered in the Presence of:

PRINCIPAL:

By _____

Name Printed: _____

Name
Printed: _____

Its: _____

Name Printed: _____

STATE OF FLORIDA
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 20__, by _____, as _____ of _____, a _____ corporation, on behalf of the corporation. He/she is personally known to me OR has produced _____ as identification.

Community Center Addition and Renovations
Gulf Breeze, Florida

NOTARY PUBLIC

(AFFIX NOTARY STAMP)

SURETY:

Name Printed: _____

By _____
Name
Printed: _____

Its: _____

Name Printed: _____

STATE OF FLORIDA
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 20__, by _____, as _____, of _____, a _____ corporation, on behalf of the corporation. He/she is personally known to me OR has produced _____ as identification.

NOTARY PUBLIC

(AFFIX NOTARY STAMP)

Community Center Addition and Renovations
Gulf Breeze, Florida

EXHIBIT "C"

PAYMENT BOND

BY _____ THIS _____ BOND, _____ We,
_____ (hereinafter called the "Principal")
and _____
(hereinafter called the "Surety"), located at _____
_____,
a surety insurer chartered and existing under the laws of the State of _____ and
authorized to do business in the State of Florida, are held and firmly bound unto the City of Gulf
Breeze, Florida, (hereinafter called the "City") in the sum of
_____ Dollars (\$_____) for payment of which we
bind ourselves, our heirs, our personal representatives, our successors and our assignees,
jointly and severally.

WHEREAS, Principal and City have reached a mutual agreement (hereinafter
referred to as the "Contract") as of _____ (the bid award date for project
thereto) for the _____ purpose of _____

_____, said Agreement being made a part of this Bond by this reference.

NOW, THEREFORE, THE CONDITION OF THIS BOND is such that if the
Principal shall in all respects:

1. Promptly make payments to all claimants identified or referenced in
Section 255.05(1), Florida Statutes, supplying the Principal with labor, materials or supplies, as
used directly or indirectly by the Principal in the prosecution of the Work provided for in the
Contract; and

2. Pay the City for all losses, damages, expenses, costs and attorneys' fees,
including those resulting from appellate proceedings, that the City sustains because of a default
by the Principal in contravention to the Agreement in regard to payment for such labor,
materials, or supplies furnished to the Principal;

then this Bond is void; otherwise this Bond remains in full force and effect.

BE IT FURTHER KNOWN:

1. Any changes in or under the Agreement and compliance or
noncompliance with any formalities connected with the said Agreement or alterations which may
be made in the terms of the said Contract, or in the Work to be done under it, or the giving by
the City of any extension of time for the performance of the said Contract, or any other
forbearance on the part of the City or Principal to the other, shall not in any way release the
Principal and the Surety, or either of them, their heirs, personal representatives, successors or
assigns from liability hereunder, notice to the Surety of any such changes, alterations,

Community Center Addition and Renovations
Gulf Breeze, Florida

extensions or forbearance being hereby waived.

2. Certain claimants seeking the protection of this Bond must timely comply with the requirements set forth in Section 255.05, Florida Statutes, and as otherwise provided or allowed by law.

3. As concerns payment for labor, materials and supplies, as affects certain claimants, no legal action shall be instituted against the Principal or Surety on this Bond after one (1) year from the performance of labor or the completion of delivery of the materials or supplies as is specifically mandated pursuant to Section 255.05, Florida Statutes.

THIS BOND DATED THE _____ DAY OF _____, 20____
(the date of issue by the Surety's agent and the date of such agents power-of-attorney).

Signed, Sealed and
Delivered in the Presence of:

PRINCIPAL:

Name Printed: _____

By _____
Name
Printed: _____
Its: _____

Name Printed: _____

STATE OF FLORIDA
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 20____, by _____, as _____, of _____, a _____ corporation, on behalf of the corporation. He/she is personally known to me OR has produced _____ as identification.

NOTARY PUBLIC

(AFFIX NOTARY STAMP)

SURETY:

Name Printed: _____

By _____
Name
Printed: _____
Its: _____

Community Center Addition and Renovations
Gulf Breeze, Florida

Name Printed: _____

STATE OF FLORIDA
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 20____, by _____, as _____, of _____, a _____ corporation, on behalf of the corporation. He/she is personally known to me OR has produced _____ as identification.

—

NOTARY PUBLIC

(AFFIX NOTARY STAMP)

Community Center Addition and Renovations
Gulf Breeze, Florida

EXHIBIT "D"

INSURANCE

1. The Contractor shall obtain and maintain such insurance as will protect it from (i) claims under worker's compensation laws, disability benefit laws, or other similar employee benefit laws; (ii) claims for damages because of bodily injury, occupational sickness or disease or death of his employees including claims insured by usual personal injury liability coverage; (iii) claims for damages because of bodily injury, sickness or disease or death of any person other than its employees including claims insured by usual personal injury liability coverage; and (iv) from claims for injury to or destruction of tangible personal property including loss of use resulting therefrom - - any or all of which claims may arise out of, or result from, the services, work and operations carried out pursuant to and under the requirements of the Contract Documents, whether such services, work and operations be by the Contractor, its employees, or by Subcontractor(s), or anyone employed by or under the supervision of any of them, or for whose acts any of them may be legally liable.

2. This insurance shall be obtained and written for not less than the limits of liability specified hereinafter, or as required by law, whichever is greater.

3. The Contractor shall require, and shall be responsible for assuring throughout the time the Agreement is in effect, that any and all of its Subcontractors obtain and maintain until the completion of that Subcontractor's work, such of the insurance coverages described herein as are required by law to be provided on behalf of their employees and others.

4. The Contractor shall require the insurance agent/broker to provide replacement certificates of insurance on a timely basis, but no later than five (5) days prior to policy termination.

5. The Contractor shall obtain and maintain the following insurance coverages as provided hereinbefore, and in the type, amounts and in conformance with the following minimum requirements:

A. Florida statutory worker's compensation and employers liability with minimum limits of \$500,000.00, whether required by Chapter 440, Florida Statutes, or not. In addition, coverage under the U.S. Longshoremen & Harbor Workers' and Jones Act, may be required coverages by law or regulations for the work specified in this contract. Contractor and Subcontractors may provide a valid certificate of exemption issued by the State of Florida in lieu of workers' compensation insurance coverage.

B. Commercial general liability with minimum combined single limits of \$1,000,000.00, including coverage parts of bodily injury, broad form property damage, personal injury, independent contractors, blanket contractual liability, and products and completed operations. The exclusion for underground damage, explosion and collapse shall be removed through a policy endorsement. The Commercial General Liability policy's total pollution exclusion shall be removed by endorsement.

Community Center Addition and Renovations
Gulf Breeze, Florida

C. Automobile liability with minimum combined single limits of \$100,000.00 for all hired, owned and non-owned vehicles. The Automobile Liability policy's total pollution exclusion shall be removed by endorsement.

D. Excess or umbrella liability with minimum limits of \$1,000,000.00 which are no more restrictive than the underlying limits. Umbrella coverage shall drop down to provide coverage where the underlying limits are exhausted. The umbrella policy shall mirror the Commercial General and Automobile Policies' coverage with respect to removal of the total pollution exclusion.

E. Professional liability insurance with minimum limits of \$500,000.00 for Architects and architects employed by the Contractor, if any.

F. Builders risk insurance underwritten on the "all risks of physical loss" basis for replacement cost for the full value of the completed Project to cover the City and the Contractor as their interest may appear. An installation floater may be an alternative if appropriate to the Agreement.

EXHIBIT "E"

RELEASE AND AFFIDAVIT

STATE OF FLORIDA
COUNTY OF SANTA ROSA

Before me, the undersigned authority, personally appeared _____, who after being duly sworn, deposes and says:

1. In accordance with the Contract Documents and in consideration of _____ Dollars (\$ _____) paid, _____ ("Contractor") releases and waivers for itself and its Subcontractors, materialmen, successors and assigns, all claims, demands, costs and expenses, whether in contract or in tort, against the City of Gulf Breeze, Florida, ("City") relating in any way to the performance of the Agreement between Contractor and City dated _____, 20__, for the period from _____ to _____.

2. Contractor certifies for itself and its Subcontractors, materialmen, successors and assigns, that all charges for labor, materials, supplies, lands, licenses and other expenses for which City might be sued or for which a lien or a demand against any payment bond might be filed, have been fully satisfied and paid.

3. Contractor agrees to indemnify, defend and save harmless the City from all demands or suits, claims of liens or other charges filed or asserted against the City arising out of the performance by Contractor of the Work covered by this Release and Affidavit.

4. This Release and Affidavit is given in connection with Contractor's (monthly/final) Application for Payment No. _____.

Community Center Addition and Renovations
Gulf Breeze, Florida

CONTRACTOR:

Name Printed: _____

By _____
Name
Printed: _____
Its: _____

Name Printed: _____

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of
_____, 20____, by _____, as
_____, of _____, a
_____ corporation, on behalf of the corporation. He/she is personally
known to me OR has produced _____ as identification.

NOTARY PUBLIC

(AFFIX NOTARY STAMP)

Community Center Addition and Renovations
Gulf Breeze, Florida

EXHIBIT "F"

FORM OF CONTRACT APPLICATION FOR PAYMENT

Contractor shall use a Standard AIA Form G 702, Application and Certification for Payment, and G703, Continuation Sheet, for all Applications for Payment. A separate form shall be provided for each of the two facilities.

Community Center Addition and Renovations
Gulf Breeze, Florida

EXHIBIT "G"

CHANGE ORDER

CHANGE ORDER NO.: _____

CONTRACT
NO.: _____

TO: Edwin A. Eddy, City Manager
City of Gulf Breeze
1070 Shoreline Drive
Gulf Breeze, Florida 32561

DATE: _____

PROJECT NAME: _____

PROJECT NO.: _____

Under our AGREEMENT dated _____, _____.

You hereby are authorized and directed to make the following change(s) in accordance with terms and conditions of the Agreement:

FOR	THE	(Additive)	(Deductive)	Sum	of	:
_____ (\$ _____)						

Original Agreement Amount	\$ _____

Sum of Previous Changes	\$ _____

This Change Order (Add) (Deduct)	\$ _____

Present Agreement Amount	\$ _____

This time for completion shall be (increased/decreased) by _____ (_____) calendar days due to this Change Order. Accordingly, the Contract Time is now _____ (_____) calendar days and the final completion date is _____. Your acceptance of this Change Order shall constitute a modification to our Agreement and will be performed subject to all the same terms and conditions in our Agreement indicated above, as fully as if the same were repeated in this acceptance.

The adjustment, if any, to this Agreement shall constitute a full and final settlement of any and all claims arising out of or related to the change set forth herein, including claims for impact and delay costs.

Community Center Addition and Renovations
Gulf Breeze, Florida

Accepted: _____, _____

By: _____ By: _____

SECTION 00510 OWNER-DIRECT PURCHASE PROCEDURES

General

The City reserves the right to require the Contractor to assign some or all of its subcontracts or other agreements with material suppliers directly to the City. This process will be referred to as Owner Direct Purchases (ODP) and is a method that may be utilized to create savings for the County. The City saves the amount of the sales tax when it purchases material/equipment required for a construction project directly from the manufacturer/supplier (material/equipment cost only), and simultaneously decreases the amount of the contract for the cost of the materials/equipment plus the sales tax. The contract cost reduction is accomplished through the construction change order process. Additional savings may also be realized if the County negotiates a cost reduction for the associated reduced premium cost for the project price guarantee, (e.g., performance and payment bond(s), irrevocable letter of credit, bank check, etc.)

Initial Requirements

An approval letter from the Florida Department of revenue specific to the project is necessary prior to proceeding. The City Clerk will provide the detailed project information and the City Attorney's Office will prepare this correspondence. The original must be kept in the Contract File and a copy shall be forwarded to the City Clerk, Accounts Payable.

Bid Document Specification

Material suppliers shall be selected by the contractor using competitive bidding/proposals. Supply contracts shall be awarded by the contractor to the supplier who bid/proposal is most advantageous to the City, price and other aspects considered.

The contractor shall include the price for all construction materials/equipment in lump sum price in his bid. The Contractor's bid shall also include all Florida State sales and other taxes normally applicable to such material and equipment. The City may consider purchasing any item but does not expect to issue purchase orders for less than \$5,000.00. Purchasing of selected construction materials will be administered on a deductive change order basis.

The contractor shall provide the City a list of all intended suppliers for consideration as ODP. This list shall be submitted at the same time as the preliminary schedule of values and the project (CPM) schedule. Along with the list, the contractor shall include the price quotes from the suppliers, including any terms and conditions negotiated with the suppliers. The contractor shall also supply the City with a description of materials/equipment to be supplied along with the quantities and prices. The contractor is responsible for selecting the supplier, specifications, material receipt, inspecting shipments, and assure that the material or service paid for by the City is appropriate for the construction. The contractor retains all responsibility for an acceptable finished project.

The contractor shall be responsible for maintaining the project schedule and the execution of the terms and conditions of the ODP purchase order, including expediting the suppliers' delivery schedules.

The purchase order form used for the Owner Direct Purchases has to be a City issued purchase order, and the purchase order package shall include the City's consumer certifi-

Community Center Addition and Renovations
Gulf Breeze, Florida

icate of exemption number for materials. A suggested format for the exemption certificate; Florida Department of Revenue Form OF0195, Employers Authorization to Make Purchases on Behalf of an Exempt Governmental or Non-Profit Organization.

The contract shall require the City to retain legal title to all ODP from the time ownership title changes from the seller to the buyer until it is incorporated into the project or consumed in completion of the project.

The City will remit payment directly to the suppliers of the ODP.

The City will provide insurance to cover all risk of loss or damage to the ODP. The Contract Administrator shall provide to the City Manager the following information required to procure the necessary Builders Risk Insurance Coverage for the project:

Type of project (ultimate occupancy). Business
Term of the project (i.e. 20 months, 3 weeks)

Construction Type II per Florida Building Code (i.e. Concrete Masonry Exterior, Steel Structure).

Protection (will there be sprinklers)?

Construction timeline would be helpful since this is CAT exposure. (CAT refers to catastrophic exposure (i.e. hurricane, etc.).

Is this building expansion the only project that is in progress or anticipated?

If there are other projects in progress, attach a list with completed values.

How many projects they anticipate during the year including values? Will \$10-15M limit cover all the exposure(s)?

The contractor shall be responsible for receipt and inspection of goods received and accompanying shipping documents under the ODP process, insuring they conform to specifications.

The contractor shall notify the City of any goods received that are damaged or are in non-compliance with the specifications, and to facilitate a timely replacement.

The suppliers must directly invoice the City for the ODP, but the contractor shall be responsible for approving receiving reports for goods that were received in accordance with the specifications and forwarding them to the City Clerk/Accounts Payable to be processed for payment. Procedures for receiving reports are provided for in Florida Department of Revenue Form OM-415, Owner Direct Purchases, Section F. The City must pay the ODP suppliers directly.

The contractor shall maintain records of all ODP received and incorporated into the work and provide the City with a monthly accounting.

The contractor shall be responsible for obtaining and managing all warranties and guarantees for all material and products specified in the contract documents.

Requirements for Purchase Order Issuance

The City Clerk, as a clerical function to allow for payment, will issue an electronic purchase order to the intended supplier and an electronic deduct change order/purchase order to the

Community Center Addition and Renovations
Gulf Breeze, Florida

contractor. In order to facilitate the issuing of the purchase order(s), the Contractor will assist the County in submitting to the Office of Purchasing the following:

.The list of suppliers' FEI numbers, addresses, phone numbers, etc., to enable their inclusion into the City's electronic financial system.

A deductive change order for the cost of the materials, equipment plus the sales tax, and, if possible, the amount of the change order that should include the project's guarantee associated premium cost reduction. The City Clerk, upon receipt of the approved deduct change order will issue a purchase order to the contractor reflecting the revised contract amount.

An electronic requisition, specifying price, quantity, delivery, material/equipment description, etc., made out to the intended supplier. This information shall be identical to the price quotes mentioned in section III.c. Upon receipt of the electronic requisition, the City Clerk will issue an purchase order.

A printed copy of the ODP purchase order made out to the material supplier; and a photo copy to the contractor and the deduct change order/purchase order, made out to the contractor will be distributed as usual.

END OF SECTION 01100

SECTION 01100 SUMMARY OF WORK

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: City of Gulf Breeze Community Center – Addition and Renovations.
 - 1. Project Location: Shoreline Park North – 800 Shoreline Drive, Gulf Breeze, Florida 32561
 - 2. Owner: The City of Gulf Breeze, Florida
- B. Architect Identification: The Contract Documents, dated June 1, 2011, were prepared for Project by: Bay Design Associates, Architects & Planners, 720 Bayfront Parkway, Suite 200, Pensacola Florida, 32502.
- C. The Work consists of construction of a new 24,000 square foot (+/-) addition to the existing facility, renovations to the exterior and interior of the existing 20,000 square foot (+/-) facility, and associated sitework (underground utilities, parking lots, tennis courts).
 - 1. The Work includes concrete foundation and slabs, structural steel/steel truss/bar joist roof structure, load-bearing CMU walls, brick veneer, standing seam metal wall and roof panels, aluminum storefront and entrances, gypsum board finishes, and related HVAC, plumbing, and electrical work.
- D. Project will be constructed under a general construction contract.

1.2 WORK SEQUENCE

- A. The Work shall be conducted in three phases (See Sheet A100 of Contract Documents for general project phasing and civil drawings for specifics on sitework phasing).
 - 1. Phase 1: Tennis court demolition/resurfacing/new construction (including fencing, equipment and lighting); preloading of building pad for Building “A” in accordance with geotechnical report, and associated mobilization work. Contractor shall make all efforts to keep existing tennis courts operational during construction of new courts, and phase work such that new courts will be available when existing courts are being resurfaced. Work of this phase shall be substantially complete and ready for use within 60 days of the Notice to Proceed.
 - 2. Phase 2: Construction of Building “A” and associated selective demolition. Work will also include sitework (underground utilities, parking areas, etc) as indicated. Building “B” will remain open and operational during this period – provide protected access, barricades, etc. as required to maintain access and safety of occupants. Work of this phase shall be substantially complete and ready for use within 60 days of the Notice to Proceed.
 - 3. Phase 3: Renovation of Building “B” (existing building), including final tie ins to Building “A” and project close-out. Work of this phase shall be substantially complete and ready for use within 480 days of the Notice to Proceed

1.3 USE OF PREMISES

- A. General: Contractor shall have partial use of premises for construction operations, including use of Project site, during construction period. Contractor's use of premises is limited by the on-going use of the existing facility.

1.4 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 17-division format and CSI/CSC's "MasterFormat" numbering system.
- B. Certain products are specified as "Basis of Design". These items may include manufacturer-specific qualities, dimensions or requirements that are taken into account in the building design. These products are not proprietary in nature, and the Architect will endeavor to review products which may be considered equivalent. It is the responsibility of the alternative product supplier to prove that their product meets or exceeds the same requirements of the originally-specified product.
- C. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
 - 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
 - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01100

SECTION 01140 - WORK RESTRICTIONS

PART 1 - GENERAL

1.1 USE OF PREMISES

- A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.
 - 1. Limits: Confine constructions operations to areas delineated on Sheet A100.
 - 2. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01140

SECTION 01210 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing allowances.
 - 1. Certain materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
 - 1. Lump-sum allowances.
- C. Related Sections include the following:
 - 1. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Division 1 Section "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

1.4 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1: Brick shall be "Heritage Velour" (modular size) by Carolina Ceramics **NO SUBSTITUTIONS.**
- B. Allowance No. 2: Carpet Tiles – allow \$35/square yard installed including all materials, labor and accessories.
- C. Allowance No. 3: Resilient Flooring – allow \$35/square yard installed including all materials, labor and accessories.

END OF SECTION 01210

SECTION 01230 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

Community Center Addition and Renovations
Gulf Breeze, Florida

- A. Alternate No. 1: **DELETE** Audio/Visual Work associated with Gymnasium (Room 116) Refer to Specification Section 17750 and A/V drawings
- B. Alternate No. 2: **DELETE** Audio/Visual Work associated with Gymnasium (Room 001) Refer to Specification Section 17750 and A/V drawings
- C. Alternate No. 3: **DELETE** Audio/Visual Work associated with Multipurpose Room (Room 113) Refer to Specification Section 17750 and A/V drawings
- D. Alternate No. 4: **DELETE** Audio/Visual Work associated with Multipurpose Room (Room 104) Refer to Specification Section 17750 and A/V drawings
- E. Alternate No. 5: **DELETE** Audio/Visual Work associated with Multipurpose Room (Room 004) Refer to Specification Section 17750 and A/V drawings
- F. Alternate No. 6: **DELETE** Audio/Visual Work associated with Multipurpose Room (Room 016) Refer to Specification Section 17750 and A/V drawings
- G. Alternate No. 7: **DELETE** Food Service Equipment in Kitchen/Concession (Room 111) – Specification Section 11400
- H. Alternate No. 8: **ADD** Re-finish / re-stripe existing Gymnasium floor (Room 001) to match new Gymnasium
- I. Alternate No. 9: **DELETE** Telescoping Stands on East side of Gymnasium (Room 116) – Specification Section 12260

3.2 AWARDING OF ALTERNATES

- A. The Owner reserves the right to award alternate bid items in any order or combination which he deems to be in the best interest of the City of Gulf Breeze..

END OF SECTION 01230

SECTION 01250 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Sections include the following:
 - 1. Division 1 Section "Allowances" for procedural requirements for handling and processing allowances.
 - 2. Division 1 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

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

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 - 2. Within 20 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

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

1.5 ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, base each Change Order proposal on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
1. Include installation costs in purchase amount only where indicated as part of the allowance.
 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
 3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
 4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the Purchase Order amount or Contractor's handling, labor, installation, overhead, and profit. Submit claims within 21 days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. Owner will reject claims submitted later than 21 days after such authorization.
1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
 2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

1.6 CHANGE ORDER PROCEDURES

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

1.7 CONSTRUCTION CHANGE DIRECTIVE

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01250

SECTION 01290 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including Application for Payment forms with Continuation Sheets.
 - 2. Submit the Schedule of Values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 - 2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value.
 - 1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 - 3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
 - 4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.3 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit 5 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

Community Center Addition and Renovations
Gulf Breeze, Florida

1. Submit partial waivers on each item for amount requested, before deduction for retainage, on each item.
 2. When an application shows completion of an item, submit final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Waiver Delays: Submit each Application for Payment with Contractor's waiver of mechanic's lien for construction period covered by the application.
 - a. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of Values.
 3. Contractor's Construction Schedule (preliminary if not final).
 4. Submittals Schedule (preliminary if not final).
 5. List of Contractor's staff assignments.
 6. Copies of building permits.
 7. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 8. Certificates of insurance and insurance policies.
 9. Performance and payment bonds.
 10. Data needed to acquire Owner's insurance.
- H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 6. AIA Document G707, "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01290

SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General Project coordination procedures.
 - 2. Coordination Drawings.
 - 3. Project meetings.
- B. See Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.2 COORDINATION

- A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's Construction Schedule.
 - 2. Preparation of the Schedule of Values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Preinstallation conferences.
 - 7. Project closeout activities.

1.3 SUBMITTALS

- A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
1. Indicate relationship of components shown on separate Shop Drawings.
 2. Indicate required installation sequences.
 3. See Division 15 Section "Mechanical General Requirements" for specific Coordination Drawing requirements for mechanical installations.
 4. See Division 16 Section "Basic Electrical Materials and Methods" for specific Coordination Drawing requirements for electrical installations.

1.4 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within 3 days of the meeting.
- B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing.
 - d. Designation of responsible personnel.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for processing Applications for Payment.
 - g. Distribution of the Contract Documents.
 - h. Submittal procedures.
 - i. Preparation of Record Documents.
 - j. Use of the premises.
 - k. Responsibility for temporary facilities and controls.
 - l. Parking availability.
 - m. Office, work, and storage areas.
 - n. Equipment deliveries and priorities.
 - o. First aid.
 - p. Security.
 - q. Progress cleaning.

- r. Working hours.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
- 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related Change Orders.
 - d. Purchases.
 - e. Deliveries.
 - f. Submittals.
 - g. Review of mockups.
 - h. Possible conflicts.
 - i. Compatibility problems.
 - j. Time schedules.
 - k. Weather limitations.
 - l. Manufacturer's written recommendations.
 - m. Warranty requirements.
 - n. Compatibility of materials.
 - o. Acceptability of substrates.
 - p. Temporary facilities and controls.
 - q. Space and access limitations.
 - r. Regulations of authorities having jurisdiction.
 - s. Testing and inspecting requirements.
 - t. Required performance results.
 - u. Protection of construction and personnel.
 - 3. Record significant conference discussions, agreements, and disagreements.
 - 4. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Conduct progress meetings at regular intervals. Coordinate dates of meetings with preparation of payment requests.
- 1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties

involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

b. Review present and future needs of each entity present, including the following:

- 1) Interface requirements.
- 2) Sequence of operations.
- 3) Status of submittals.
- 4) Deliveries.
- 5) Off-site fabrication.
- 6) Access.
- 7) Site utilization.
- 8) Temporary facilities and controls.
- 9) Work hours.
- 10) Hazards and risks.
- 11) Progress cleaning.
- 12) Quality and work standards.
- 13) Change Orders.
- 14) Documentation of information for payment requests.

3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01310

Threshold Inspection Plan

Project: *Gulf Breeze Community Center*

Location: *Gulf Breeze, Florida*

Owner: *The City of Gulf Breeze*

Design Professional in Responsible Charge: *Nathan Berube, PE*

This *Threshold Inspection Plan* is submitted as a condition for permit issuance in accordance with the requirements of the Florida Statutes section 553.79.5. It includes a schedule of Special Inspection services applicable to this project as well as the minimum required qualifications for the Special Inspector and the other approved agencies to be retained for conducting these inspections and tests. This *Threshold Inspection plan* encompasses the structural discipline only.

The Special Inspector shall keep records of all inspections and shall furnish inspection reports to the Building Official and the Registered Design Professional in Responsible Charge. Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the Registered Design Professional in Responsible Charge. The Special Inspection program does not relieve the Contractor of his or her responsibilities.

Interim reports shall be submitted by the Special Inspector to the Building Official and the Registered Design Professional in Responsible Charge.

A *Final Report of Special Inspections* documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections shall be submitted prior to issuance of a Certificate of Use and Occupancy. A sample *Final Report of Special Inspections* is included at the end of this *Threshold Inspection Plan*.

The Contractor shall cooperate with the Special Inspector and his agents so that the inspections and testing can be performed without hindrance. The contractor shall review this Structural inspection plan and shall notify the Special Inspector or Testing Agency at least 24 hours in advance of a required inspection or test. Uninspected work that required inspection may be rejected solely on that basis. The contractor shall provide incidental labor and facilities to provide access to the work to be inspected or tested and shall keep at the project site the latest construction drawings, field sketches, approved shop drawings, and specifications for use by the inspectors and testing technicians. The Special Inspection program shall in no way relieve the contractor of his responsibilities and all work subject to Special Inspection shall first be reviewed by the contractor's quality control personnel. Job site safety and means and methods of construction are solely the responsibility of the Contractor.

Interim Report Frequency: *Twice monthly.*

Prepared by:

Nathan Berube, FL PE 55850

(type or print name)



Signature

5-25-11

Date



Owner's Authorization:

Building Official's Acceptance:

Signature

Date

Signature

Date

Schedule of Inspection and Testing Agencies

This Structural Inspection Plan includes the following building systems:

Soils and Foundations
Masonry
Cold-Formed Steel Framing

Cast-in-Place Concrete
Structural Steel

Agent	Minimum Qualifications
1. Special Inspector (SI)	Professional Engineer or Architect also licensed by the State of Florida as a Special Inspector of Threshold Type Buildings.
2. Inspector's Representative (SIR)	Qualified by education or licensure in accordance with Chapter 61G15-35.004(2) of the Florida Administrative Code including licensure as a Professional Engineer or Architect, graduate of a Civil Engineering, Structural Engineering, or Architectural education program, successful completion of the NCEES Fundamentals of Engineering Examination, or registration as a building inspector or general contractor.
3. Testing Agency (TA)	A company licensed, insured and qualified by experience in sampling, testing, and/or inspecting concrete, soils, and steel connections approved by the Registered Design Professional in Responsible Charge and the Building Official. Testing Agency shall have a full time licensed Professional Engineer on staff who shall certify all test reports and in responsible charge of field and laboratory testing operations.
4. Soil Testing Technician (S-tech)	A regular employee of the Testing Agency qualified by experience or training to perform required testing and able to demonstrate competence by oral or written examination.
5. Concrete Field Testing Technician (C-Tech)	A regular employee of the Testing Agency qualified by ACI certification as a Concrete Field Testing Technician – Grade 1.
6. Structural Steel Testing Technician (SS-Tech)	A regular employee of the Testing Agency qualified by experience or training to perform required inspection of bolted steel connections and able to demonstrate competence by oral or written examination. Welded connections shall require AWS Certified Welding Inspectors or ASNT-TC Level II testing technician.

Note: The Special Inspector shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work. At the discretion of the Building Official, the testing agency may be engaged by the contractor as long as all reports are submitted by the testing agency directly to the Registered Design Professional in Responsible Charge and the Special Inspector.

The Special Inspector may send his Representative to the site on his behalf, but the Special Inspector who holds the license shall personally visit the site not less than once every 2 weeks during the duration of the structural work.

Item	Agency	Scope
1. Shallow Foundations	TA	<i>Inspect soils below footings for adequate bearing capacity and consistency with geotechnical report.</i> <i>Inspect removal of unsuitable material and preparation of subgrade prior to placement of controlled fill</i>
2. Controlled Structural Fill	TA	<i>Perform sieve tests (ASTM D422 & D1140) and modified Proctor tests (ASTM D1557) of each source of fill material.</i> <i>Inspect placement, lift thickness and compaction of controlled fill.</i> <i>Test density of each lift of fill by nuclear methods (ASTM D2922)</i> <i>Verify extent and slope of fill placement.</i>

Item	Agency # (Qualif.)	Scope
1. Mix Design	SI/SIR	Review concrete batch tickets and verify compliance with approved mix design. Verify that water added at the site does not exceed that allowed by the mix design.
2. Reinforcement Installation	SI/SIR	Inspect size, spacing, cover, positioning and grade of reinforcing steel. Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar laps and mechanical splices. Verify that bars are adequately tied and supported on chairs or bolsters
3. Anchor Rods	SI/SIR	Inspect size, positioning and embedment of anchor rods. Inspect concrete placement and consolidation around anchors.
4. Concrete Placement	SI/SIR/TA	Periodically inspect placement of concrete. Verify that concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated.
5. Sampling and Testing of Concrete	TA	Test concrete compressive strength (ASTM C31 & C39), slump (ASTM C143), air-content (ASTM C231 or C173) and temperature (ASTM C1064).
6. Epoxy Anchors	SI/SIR	Inspect for proper embedment depth, hole size, hole cleanliness, epoxy type, epoxy application, and anchor size.

Item	Agency # (Qualif.)	Scope
1. Mixing of Mortar and Grout	SI/SIR	<i>Periodically inspect proportioning, mixing and retempering of mortar and grout.</i>
2. Installation of Masonry	SI/SIR	<i>Periodically inspect size, layout, bonding and placement of masonry units.</i>
3. Mortar Joints	SI/SIR	<i>Periodically inspect construction of mortar joints including tooling and filling of head joints.</i>
4. Reinforcement Installation	SI/SIR	<i>Inspect placement, positioning and lapping of reinforcing steel.</i> <i>Inspect welding of reinforcing steel.</i>
5. Grouting Operations	SI/SIR	<i>Periodically inspect placement and consolidation of grout.</i> <i>Inspect masonry clean-outs for high-lift grouting.</i>
6. Weather Protection	SI/SIR	<i>Periodically inspect cold weather protection and hot weather protection procedures. Verify that wall cavities are protected against precipitation.</i>
7. Evaluation of Masonry Strength	TA	<i>Test compressive strength of mortar and grout cube samples (ASTM C780).</i> <i>Test compressive strength of masonry prisms (ASTM C1314).</i>
8. Anchors and Ties	SI/SIR	<i>Inspect size, location, spacing and embedment of dowels, anchors and ties.</i>

Item	Agency # (Qualif.)	Scope
1. Open Web Steel Joists	SI/SIR/TA	<i>Special Inspector or Representative to inspect installation and bridging of joists. Testing Agency to inspect field welding.</i>
2. Bolting	TA	<i>Inspect installation and tightening of high-strength bolts</i>
3. Welding	TA	<i>Visually inspect all welds. Inspect pre-heat, post-heat and surface preparation between passes. Verify size and length of fillet welds.</i> <i>Ultrasonic testing of all full-penetration welds.</i>
4. Structural Details	SI/SIR	<i>Inspect steel frame for compliance with structural drawings, including bracing, member configuration and connection details.</i>
5. Metal Deck	SI/SIR/TA	<i>Special Inspector or Representative to inspect deck installation, fastener type and pattern, and side lap fastener type and spacing. Testing Agency to visually inspect all field welds.</i>

Item	Agency # (Qualif.)	Scope
1. Member Sizes	SI/SIR	<i>Inspect for proper size and gage of cold formed framing members.</i>
2. Mechanical Connections and Framing Details	SI/SIR	<i>Inspect for conformance of connections to approved shop drawings and structural contract drawings.</i>

Final Report of Special Inspections

Project:

Location:

Owner:

Owner's Address:

Architect of Record:

Structural Engineer of Record:

To the best of my information, knowledge and belief, the Special Inspections for all structural load bearing components required for this project, and itemized in the *Structural Inspection Plan* submitted for permit, have been performed and the construction complies with the permitted documents. Where applicable, the shoring and reshoring has been inspected for conformance with the shoring and reshoring plans submitted for permit by a qualified professional engineer. All discovered discrepancies have been reported and resolved other than the following:

Comments:

(Attach continuation sheets if required to complete the description of corrections.)

Interim reports submitted prior to this final report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,
Special Inspector

(Type or print name)

Signature

Date

Licensed Professional Seal

SECTION 01320 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Preliminary Construction Schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Submittals Schedule.
 - 4. Daily construction reports.
 - 5. Material location reports.
 - 6. Field condition reports.
 - 7. Special reports.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
 - 2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
 - 3. Division 1 Section "Submittal Procedures" for submitting schedules and reports.
 - 4. Division 1 Section "Quality Requirements" for submitting a schedule of tests and inspections.
 - 5. Division 1 Section "Closeout Procedures" for Project Record Documents at Project closeout.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
 - 2. Predecessor activity is an activity that must be completed before a given activity can be started.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration and contains no float.

- D. Event: The starting or ending point of an activity.
- E. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the following activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- F. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- G. Major Area: A story of construction, a separate building, or a similar significant construction element.
- H. Milestone: A key or critical point in time for reference or measurement.
- I. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.

1.4 SUBMITTALS

- A. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Scheduled date for Architect's final release or approval.
- B. Preliminary Construction Schedule: Submit two printed copies; one a single sheet of reproducible media, and one a print.
- C. Contractor's Construction Schedule: Submit two printed copies of initial schedule, one a reproducible print and one a blue- or black-line print, large enough to show entire schedule for entire construction period.
- D. CPM Reports: Concurrent with CPM schedule, submit three printed copies of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float.
 - 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
- E. Daily Construction Reports: Submit two copies at monthly intervals.
- F. Field Condition Reports: Submit two copies at time of discovery of differing conditions.

- G. Special Reports: Submit two copies at time of unusual event.

1.5 QUALITY ASSURANCE

- A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to the Preliminary Construction Schedule and Contractor's Construction Schedule, including, but not limited to, the following:
1. Review software limitations and content and format for reports.
 2. Review delivery dates for Owner-furnished products.
 3. Review schedule for work of Owner's separate contracts.
 4. Review time required for review of submittals and resubmittals.
 5. Review requirements for tests and inspections by independent testing and inspecting agencies.
 6. Review time required for completion and startup procedures.
 7. Review and finalize list of construction activities to be included in schedule.
 8. Review submittal requirements and procedures.
 9. Review procedures for updating schedule.

1.6 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
1. Secure time commitments for performing critical elements of the Work from parties involved.
 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.
- C. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities including temporary lighting.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
 2. Initial Submittal: Submit concurrently with preliminary bar-chart schedule. Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

- a. At Contractor's option, show submittals on the Preliminary Construction Schedule, instead of tabulating them separately.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."
- B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.
 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
 1. Activity Duration: Define activities so no activity is longer than 30 days, unless specifically allowed by Architect.
 2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 3. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 4. Startup and Testing Time: Include not less than 15 days for startup and testing.
 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 1. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 2. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 1 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 3. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 1 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 4. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Uninterruptible services.
 - b. Provisions for future construction.
 5. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.

- d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Startup and placement into final use and operation.
6. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
- a. Structural completion.
 - b. Permanent space enclosure.
 - c. Completion of mechanical installation.
 - d. Completion of electrical installation.
 - e. Substantial Completion.
- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

2.3 PRELIMINARY CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within seven days of date established for the Notice to Proceed.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.4 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

- A. General: Prepare network diagrams using AON (activity-on-node) format.
- B. Preliminary Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare Contractor's Construction Schedule using a CPM network analysis diagram.
 - 1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 30 days after date established for the Notice to Proceed.
 - 2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
 - 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 - 4. Use "one workday" as the unit of time.

- D. Initial Issue of Schedule: Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Principal events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.
 7. Activity duration in workdays.
 8. Total float or slack time.
 9. Average size of workforce.
 10. Dollar value of activity (coordinated with the Schedule of Values).
- E. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.

2.5 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.
 3. Approximate count of personnel at Project site.
 4. High and low temperatures and general weather conditions.
 5. Accidents.
 6. Meetings and significant decisions.
 7. Unusual events (refer to special reports).
 8. Stoppages, delays, shortages, and losses.
 9. Emergency procedures.
 10. Orders and requests of authorities having jurisdiction.
 11. Change Orders received and implemented.
 12. Services connected and disconnected.
 13. Equipment or system tests and startups.
 14. Partial Completions and occupancies.
 15. Substantial Completions authorized.
- B. Material Location Reports: At monthly intervals, prepare a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.
- C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit with a request for information.

Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.6 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate Actual Completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
 - 1. Post copies in Project meeting rooms and temporary field offices.
 - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01320

SECTION 01330 - SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Submittal procedures.
 - 2. Submittal schedule.
 - 3. Shop Drawings.
 - 4. Product Data.
 - 5. Samples.
 - 6. Quality control submittals.
- B. Related Sections:
 - 1. **Section 01332 - Sustainable Design Reporting.**
 - 2. Section 01400 - Quality Requirements.

1.2 SUBMITTAL PROCEDURES

- A. Number each submittal with Project Manual section number and a sequential number within each section. Number resubmittals with original number and an alphabetic suffix.
- B. Identify Project, Contractor, Subcontractor or supplier, pertinent Drawing sheet and detail numbers, and specification Section number, as appropriate.
- C. Submit all submittals listed under "Submittals for Review" simultaneously for each Product or Specification Section.
- D. Where multiple Products function as an assembly, group submittals for all related Products into single submittal.
- E. **Refer to Section 01332 for Sustainable Design Submittals to be submitted concurrently with Submittals for Review.**
- F. Architect will not review incomplete submittals.
- G. Apply Contractor's stamp, signed or initialed certifying that:
 - 1. Submittal was reviewed.
 - 2. Products, field dimensions, and adjacent construction have been verified.
 - 3. Information has been coordinated with requirements of Work and Contract Documents.
- H. Schedule submittals to expedite the Project, and deliver to Architect. Coordinate submittal of related items.
- I. For each submittal, allow 14 days for Architect's review, excluding delivery time to and from Contractor.
- J. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of completed Work.

- K. Revise and resubmit submittals when required; identify all changes made since previous submittal.
- L. Distribute copies of reviewed submittals to concerned parties and to Project Record Documents file. Instruct parties to promptly report any inability to comply with provisions.

1.3 PROPOSED PRODUCTS LIST

- A. Within 30 days after date of Notice to Proceed, submit a complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
- C. Submit electronically in Adobe PDF format.

1.4 SUBMITTAL SCHEDULE

- A. Within 30 days after date of Notice to Proceed, submit a submittal schedule showing all submittals proposed for project, including submittals listed as:
 - 1. Submittals for Review.
 - 2. Quality Control Submittals.
 - 3. Sustainable Design Submittals.
 - 4. Closeout Submittals.
- B. Include for each submittal:
 - 1. Specification section number.
 - 2. Description of submittal.
 - 3. Type of submittal.
 - 4. Anticipated submittal date.
 - 5. For submittals requiring Architect's review, date reviewed submittal will be required from Architect.
- C. Submit electronically in Adobe PDF format.

1.5 SHOP DRAWINGS

- A. Present information in clear and thorough manner.
- B. Identify details by reference to sheet and detail numbers or room number shown on Drawings.
- C. Reproductions of details contained in Contract Documents are not acceptable.
- D. Submit electronically in Adobe PDF format. Architect will return reviewed PDF format to Contractor for distribution.

1.6 PRODUCT DATA

- A. Mark each copy to identify applicable products, models, options, and other data.
- B. Supplement manufacturers' standard data to provide information unique to this Project.
- C. Submit electronically in Adobe PDF format. Architect will return reviewed PDF format to Contractor for distribution.

1.7 SAMPLES

- A. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- B. Where so indicated, submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Architect's selection.
- C. Include identification on each sample, with full Project information.
- D. Unless otherwise specified in individual specifications, submit two of each sample.
- E. Architect will notify Contractor of approval or rejection of samples, or of selection of color, texture, or pattern if full range is submitted.

1.8 QUALITY CONTROL SUBMITTALS

- A. Quality control submittals specified in Section 01400 are for information and do not require Architect's responsive action except to require resubmission of incomplete or incorrect information.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01332 - SUSTAINABLE DESIGN REPORTING
PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Sustainable design reporting and documentation.
- B. Related Sections:
 - 1. Section 01290 - Payment Procedures.
 - 2. Section 01330 - Submittal Requirements: General requirements applicable to all submittals.
 - 3. Section 01354 - Indoor Air Quality Management.
 - 4. Section 01741 - Construction Waste Management.
 - 5. Section 01811 - Sustainable Design Requirements.
 - 6. Section 01910 - Commissioning.

1.2 REFERENCES

- A. U.S. Green Building Council (USGBC) - Leadership in Energy and Environmental Design (LEED) 2009 - Green Building Rating System For New Construction and Major Renovations.

1.3 SUSTAINABLE DESIGN ACTION PLAN

- A. Submit Sustainable Design Action Plan within 30 days after date of Notice to Proceed.
- B. Indicate in Sustainable Design Action Plan how following requirements will be met:
 - 1. SS Prerequisite 1 - Erosion and Sedimentation Control: Erosion and sedimentation control plan.
 - 2. Credit EA 5 - Measurement and Verification: Measurement and verification plan.
 - 3. Credit MR 2 - Construction Waste Management: Include preliminary construction waste management plan per Section 01 7419.
 - 4. Credit MR 3 - Materials Reuse: List proposed reused materials; indicate value or cost of reused materials.
 - 5. Credit MR 4 - Recycled Content: List proposed materials containing recycled content; indicate product cost, recycled content percent, and whether pre-consumer or post-consumer.
 - 6. Credit MR 5 - Regional Materials: List proposed materials extracted, processed, or harvested and manufactured within 500 mile radius of Project site; indicate product cost.
 - 7. Credit EQ 3.1 - Construction IAQ Management Plan: Include preliminary Indoor Air Quality Management Plan per Section 01 3546.

- C. Submit electronically in Adobe PDF format.

1.4 SUSTAINABLE DESIGN SUBMITTALS

- A. Submit cost schedule of products meeting sustainable design criteria.

- B. Coordinate Schedule of Values line items specified in Section 01 2900 with Sustainable Design Cost Data Submittals line items.
- C. Submit updated Sustainable Design Cost Data Submittal along with each Application for Payment.
- D. Except in instances where documentation is dependent on actual shipments, batches, or lots transported to Project, submit Sustainable Design Submittals concurrently with Submittals for Review.
- E. Submit electronically in Adobe PDF format.
- F. Content:
 - 1. Product descriptions:
 - a. Identify products by specification section number.
 - b. Provide product name and name of manufacturer or supplier.
 - c. Provide separate line item for each product requiring sustainable design credit.
 - 2. Product cost data: Provide product cost for each line item, excluding installation labor and equipment rental.
 - 3. Project cost data; provide total cost to Contractor for:
 - a. Products used in Divisions 03 through 10, 31, and 32.
 - b. Wood-based products used.
- G. Required Submittals:
 - 1. Sustainable Sites:
 - a. SS Prerequisite 1 - Construction Activity Pollution Prevention:
 - 1) Copy of Erosion and Sedimentation Control Plan.
 - 2) Date-stamped photographs showing erosion and sedimentation controls implemented.
 - b. Credit SS 7.2 - Heat Island Effect - Roof: Certify Solar Reflectance Index of roof surfaces.
 - c. Credit SS 8 - Light Pollution Reduction: Product Data for automatic lighting controls.
 - 2. Water Efficiency:
 - a. Credit WE 3 - Water Use Reduction: Certify flow and flush rates of water consuming fixtures.
 - 3. Energy and Atmosphere:
 - a. EA Prerequisite 1 - Fundamental Commissioning of Building Energy Systems: Submit documentation specified in Section 01910
 - b. Credit EA 4 - Enhanced Refrigeration Management: Product Data for refrigerants and HVAC equipment.
 - c. Credit EA 5 - Measurement and Verification: Product Data for metering of building energy use.
 - 4. Materials and Resources:
 - a. Credit MR 2 - Construction Waste Management: Submit documentation specified in Section 01741.
 - b. Credit MR 3 - Materials Reuse: Show value or cost and source of salvaged, refurbished, and reused materials.
 - c. Credit MR 4 - Recycled Content:
 - 1) Certify percentages of post-consumer and pre-consumer recycled content.

- 2) Show cost of products containing recycled content.
 - 3) Certify manufacturer, product, and recycled content information source.
 - d. Credit MR 5 - Regional Materials:
 - 1) Indicate cost of products harvested, extracted, recovered, or manufactured within 500 mile radius of Project site.
 - 2) Certify distance between manufacturer and project and between manufacturer and extraction or harvest point in miles.
 - 3) Show cost of products meeting regional material requirements.
 - 4) Certify manufacturer, product, and regional information source.
 - e. Credit MR 6 - Rapidly Renewable Materials:
 - 1) Certify materials made from plants harvested within a ten year or shorter cycle.
 - 2) Certify manufacturer, product, and information source.
- 5. Indoor Environmental Quality:
 - a. Credit EQ 1 - Outdoor Air Delivery Monitoring: Product Data for carbon dioxide monitors and airflow measurement devices.
 - b. Credit EQ 3.1 - Construction IAQ Management Plan: During Construction: Submit documentation specified in Section 01 3546.
 - c. Credit EQ 3.2 - Construction IAQ Management Plan: Before Occupancy: Submit documentation specified in Section 01 3546.
 - d. Credit EQ 4.1 - Low-Emitting Materials - Adhesives and Sealants: Certify volatile organic compound (VOC) content.
 - e. Credit EQ 4.2 - Low-Emitting Materials - Paints and Coatings: Certify volatile organic compound (VOC) content.
 - f. Credit EQ 4.3 - Low-Emitting Materials - Flooring Systems:
 - 1) Certify that carpet meets CRI Green Label Plus Program requirements.
 - 2) Certify that hard surface flooring meets RFI FloorScore requirements.
 - 3) Indicate volatile organic compound (VOC) content for adhesives.
 - g. Credit EQ 4.4 - Low-Emitting Materials - Composite Wood and Agrifiber Products:
 - 1) Certify that products do not contain urea-formaldehyde resins.
 - 2) Certify manufacturer, product, and information source.
 - h. Credit EQ 5 - Indoor Pollution Source Control: Product Data for air infiltration media used including manufacturer and MERV rating.
 - i. Credit EQ 6.1 - Controllability of Systems Lighting: Product Data and Shop Drawings for sensors and control systems.
- 6. Innovation and Design Process:
 - a. Credit ID 1 - Innovation in Design: .

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01352 - LEED REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general requirements and procedures for compliance with certain USGBC LEED prerequisites and credits needed for Project to obtain LEED **Certified** certification based on **LEED-NC, Version 2009**.
- B. Related Sections:
 - 1. Divisions 1 through 17 Sections for LEED requirements specific to the work of each of these Sections. Requirements may or may not include reference to LEED.

1.2 DEFINITIONS

- A. LEED: Leadership in Energy & Environmental Design.
- B. Rapidly Renewable Materials: Materials made from plants that are typically harvested within a 10-year or shorter cycle. Rapidly renewable materials include products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils, or wool.
- C. Regional Materials: Materials that have been extracted, harvested, or recovered, as well as manufactured, within **500 miles (800 km)** of Project site. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.
- D. Regionally Manufactured Materials: Materials that are manufactured within a radius of **500 miles (800 km)** from Project site. Manufacturing refers to the final assembly of components into the building product that is installed at Project site.
- E. Regionally Extracted and Manufactured Materials: Regionally manufactured materials made from raw materials that are extracted, harvested, or recovered within a radius of **500 miles (800 km)** from Project site.
- F. Recycled Content: The recycled content value of a material assembly shall be determined by weight.
 - 1. "Post-consumer" material is defined as waste material generated by households or by commercial, industrial, and institutional facilities in their role as end users of the product, which can no longer be used for its intended purpose.
 - 2. "Pre-consumer" material is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.
- G. Recycled Content: The percentage by weight of constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (pre-consumer), or after consumer use (post-consumer).

1. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product are not recycled materials.
2. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer recycled materials.

1.3 SUBMITTALS

- A. Project Materials Cost Data: Provide statement indicating total cost for building materials used for Project, excluding mechanical, electrical, and plumbing components, and specialty items such as elevators and equipment.
- B. LEED Action Plans: Provide preliminary submittals within **60** days of date established for **the Notice to Proceed** indicating how the following requirements will be met:
 1. Credit MR 4.1 **and** Credit MR 4.2: List of proposed materials with recycled content. Indicate cost, post-consumer recycled content, and pre-consumer recycled content for each product having recycled content.
 2. Credit MR 5.1 **and** Credit MR 5.2: List of proposed regional materials. Identify each regional material, including its source, cost, and the fraction by weight that is considered regional.
 3. Credit MR 5.1[**and** Credit MR 5.2]: List of proposed regionally manufactured materials[**and regionally extracted and manufactured materials**].
- C. LEED Progress Reports: Concurrent with each Application for Payment, submit reports comparing actual construction and purchasing activities with LEED action plans.
- D. LEED Documentation Submittals:
 1. Credit EA 5: Product data and wiring diagrams for sensors and data collection system used to provide continuous metering of building energy-consumption performance over **time**.
 2. Credit MR 3.1 : Receipts for salvaged and refurbished materials.
 3. Credit MR 4.1 **and** Credit MR 4.2: Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content. Include statement indicating costs for each product having recycled content.
 4. Credit MR 5.1 **and** Credit MR 5.2: Product data for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
 5. Credit EQ 3.1:
 - a. Construction indoor-air-quality management plan.
 - b. Product data for temporary filtration media.
 - c. Product data for filtration media used during occupancy.
 - d. Construction Documentation: Six photographs at three different times during the construction period, along with a brief description of the SMACNA approach employed, documenting implementation of the indoor-air-quality management measures, such as protection of ducts and on-site stored or installed absorptive materials.

6. Credit EQ 4.1: Product data for adhesives and sealants used inside the weatherproofing system indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Credit EQ 4.2: Product data for paints and coatings used inside the weatherproofing system indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D (EPA Method 24).
8. Credit EQ 4.4: Product data for products containing composite wood or agrifiber products or wood glues indicating that they do not contain urea-formaldehyde resin.

PART 2 - PRODUCTS

2.1 RECYCLED CONTENT OF MATERIALS

- A. Credit MR 4.1 **and Credit MR 4.2:** Provide building materials with recycled content such that post-consumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of **10** percent of cost of materials used for Project.
 1. Cost of post-consumer recycled content of an item shall be determined by dividing weight of post-consumer recycled content in the item by total weight of the item and multiplying by cost of the item.
 2. Cost of post-consumer recycled content plus one-half of pre-consumer recycled content of an item shall be determined by dividing weight of post-consumer recycled content plus one-half of pre-consumer recycled content in the item by total weight of the item and multiplying by cost of the item.
 3. Do not include mechanical and electrical components in the calculation.

2.2 REGIONAL MATERIALS

- A. Credit MR 5.1 **and Credit MR 5.2:** Provide **20** percent of building materials (by cost) that are regional materials.
- B. Credit MR 5.1: Provide 20 percent of building materials (by cost) that are regionally manufactured materials.
- C. Credit MR 5.2: Provide 10 percent of building materials (by cost) that are regionally extracted and manufactured materials.

2.3 LOW-EMITTING MATERIALS

- A. Credit EQ 4.1: For field applications that are inside the weatherproofing system, use adhesives and sealants that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 1. Wood Glues: 30 g/L.
 2. Metal to Metal Adhesives: 30 g/L.
 3. Adhesives for Porous Materials (Except Wood): 50 g/L.
 4. Subfloor Adhesives: 50 g/L.
 5. Plastic Foam Adhesives: 50 g/L.
 6. Carpet Adhesives: 50 g/L.
 7. Carpet Pad Adhesives: 50 g/L.
 8. VCT and Asphalt Tile Adhesives: 50 g/L.

9. Cove Base Adhesives: 50 g/L.
 10. Gypsum Board and Panel Adhesives: 50 g/L.
 11. Rubber Floor Adhesives: 60 g/L.
 12. Ceramic Tile Adhesives: 65 g/L.
 13. Multipurpose Construction Adhesives: 70 g/L.
 14. Fiberglass Adhesives: 80 g/L.
 15. Contact Adhesive: 80 g/L.
 16. Structural Glazing Adhesives: 100 g/L.
 17. Wood Flooring Adhesive: 100 g/L.
 18. Structural Wood Member Adhesive: 140 g/L.
 19. Special Purpose Contact Adhesive (contact adhesive that is used to bond melamine covered board, metal, unsupported vinyl, Teflon, ultra-high molecular weight polyethylene, rubber or wood veneer 1/16 inch or less in thickness to any surface): 250 g/L.
 20. Top and Trim Adhesive: 250 g/L.
 21. Plastic Cement Welding Compounds: 350 g/L.
 22. ABS Welding Compounds: 400 g/L.
 23. CPVC Welding Compounds: 490 g/L.
 24. PVC Welding Compounds: 510 g/L.
 25. Adhesive Primer for Plastic: 650 g/L.
 26. Sheet Applied Rubber Lining Adhesive: 850 g/L.
 27. Aerosol Adhesive, General Purpose Mist Spray: 65 percent by weight.
 28. Aerosol Adhesive, General Purpose Web Spray: 55 percent by weight.
 29. Special Purpose Aerosol Adhesive (All Types): 70 percent by weight.
 30. Other Adhesives: 250 g/L.
 31. Architectural Sealants: 250 g/L.
 32. Nonmembrane Roof Sealants: 300 g/L.
 33. Single-Ply Roof Membrane Sealants: 450 g/L.
 34. Other Sealants: 420 g/L.
 35. Sealant Primers for Nonporous Substrates: 250 g/L.
 36. Sealant Primers for Porous Substrates: 775 g/L.
 37. Modified Bituminous Sealant Primers: 500 g/L.
 38. Other Sealant Primers: 750 g/L.
- B. Credit EQ 4.2: For field applications that are inside the weatherproofing system, use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24 **and the following chemical restrictions**):
1. Flat Paints, Coatings, and Primers: VOC not more than 50 g/L.
 2. Nonflat Paints, Coatings, and Primers: VOC not more than 150 g/L.
 3. Anticorrosive and Antirust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
 4. Clear Wood Finishes, Varnishes: VOC not more than 350 g/L.
 5. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
 6. Floor Coatings: VOC not more than 100 g/L.
 7. Shellacs, Clear: VOC not more than 730 g/L.
 8. Shellacs, Pigmented: VOC not more than 550 g/L.
 9. Stains: VOC not more than 250 g/L.
 10. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 11. Restricted Components: Paints and coatings shall not contain acrolein, acrylonitrile, antimony, benzene, butyl benzyl phthalate, cadmium, di (2-ethylhexyl) phthalate, di-n-butyl phthalate, di-n-octyl phthalate, 1,2-dichlorobenzene, diethyl phthalate, diethyl phthalate, dimethyl phthalate, ethylbenzene, formaldehyde, hexavalent chromium,

isophorone, lead, mercury, methyl ethyl ketone, methyl isobutyl ketone, methylene chloride, naphthalene, toluene (methylbenzene), 1,1,1-trichloroethane, or vinyl chloride.

- C. Credit EQ 4.4: Do not use composite wood or agrifiber products or adhesives that contain urea-formaldehyde resin.

PART 3 - EXECUTION

3.1 REFRIGERANT REMOVAL

- A. Prerequisite EA 3: Remove CFC-based refrigerants from existing HVAC&R equipment indicated to remain and replace with refrigerants that are not CFC based. Replace or adjust existing equipment to accommodate new refrigerant as described in Division 15 Sections.

3.2 MEASUREMENT AND VERIFICATION

- A. Credit EA 5: Implement measurement and verification plan consistent with **Option B: Energy Conservation Measure Isolation** in the EVO's "International Performance Measurement and Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction," and as further defined by the following:
- B. If not already in place, install metering equipment to measure energy usage. Monitor, record, and trend log measurements.
- C. Evaluate energy performance and efficiency by comparing actual to predicted performance.
- D. Measurement and verification period shall cover at least one year of postconstruction occupancy.

3.3 CONSTRUCTION INDOOR-AIR-QUALITY MANAGEMENT

- A. Credit EQ 3.1: Comply with SMACNA's "SMACNA IAQ Guideline for Occupied Buildings under Construction."
 - 1. If Owner authorizes use of permanent heating, cooling, and ventilating systems during construction period as specified in Division 1 Section "Temporary Facilities and Controls," install filter media having a MERV 8 according to ASHRAE 52.2 at each return-air inlet for the air-handling system used during construction.
 - 2. Replace all air filters immediately prior to occupancy.

END OF SECTION 01352



LEED 2009 for New Construction and Major Renovations

Project Checklist

Project Name: City of Gulf Breeze Community Center

Date: June 1, 2011

10 3 13 Sustainable Sites Possible Points: 26

Y	?	N			
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
		5	Credit 2	Development Density and Community Connectivity	5
		1	Credit 3	Brownfield Redevelopment	1
		6	Credit 4.1	Alternative Transportation—Public Transportation Access	6
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
3			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
	2		Credit 4.4	Alternative Transportation—Parking Capacity	2
		1	Credit 5.1	Site Development—Protect or Restore Habitat	1
1			Credit 5.2	Site Development—Maximize Open Space	1
1			Credit 6.1	Stormwater Design—Quantity Control	1
1			Credit 6.2	Stormwater Design—Quality Control	1
	1		Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
1			Credit 8	Light Pollution Reduction	1

2 3 5 Water Efficiency Possible Points: 10

Y	?	N			
Y			Prereq 1	Water Use Reduction—20% Reduction	
	2	2	Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
2	1	1	Credit 3	Water Use Reduction	2 to 4

8 13 17 Energy and Atmosphere Possible Points: 35

Y	?	N			
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
5	5	11	Credit 1	Optimize Energy Performance	1 to 19
	3	4	Credit 2	On-Site Renewable Energy	1 to 7
		2	Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
1	3		Credit 5	Measurement and Verification	3
	2		Credit 6	Green Power	2

7 2 5 Materials and Resources Possible Points: 14

Y	?	N			
Y			Prereq 1	Storage and Collection of Recyclables	
2	1		Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
1	1		Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
2			Credit 4	Recycled Content	1 to 2
2			Credit 5	Regional Materials	1 to 2
		1	Credit 6	Rapidly Renewable Materials	1
		1	Credit 7	Certified Wood	1

10 2 3 Indoor Environmental Quality Possible Points: 15

Y	?	N			
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
		1	Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
		1	Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
	1		Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
1			Credit 7.2	Thermal Comfort—Verification	1
		1	Credit 8.1	Daylight and Views—Daylight	1
	1		Credit 8.2	Daylight and Views—Views	1

3 3 Innovation and Design Process Possible Points: 6

Y	?	N			
1			Credit 1.1	Innovation in Design: Specific Title	1
1			Credit 1.2	Innovation in Design: Specific Title	1
	1		Credit 1.3	Innovation in Design: Specific Title	1
	1		Credit 1.4	Innovation in Design: Specific Title	1
	1		Credit 1.5	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1

2 2 Regional Priority Credits Possible Points: 4

Y	?	N			
	1		Credit 1.1	Regional Priority: Specific Credit	1
	1		Credit 1.2	Regional Priority: Specific Credit	1
		1	Credit 1.3	Regional Priority: Specific Credit	1
		1	Credit 1.4	Regional Priority: Specific Credit	1

40 28 45 Total Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

SECTION 01354 - INDOOR AIR QUALITY MANAGEMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Indoor Air Quality Management Plan.
 - 2. During construction:
 - a. Protection of heating, ventilating, and air conditioning systems.
 - b. Reducing emissions through source control.
 - c. Pathway interruption.
 - d. Housekeeping.
 - e. Scheduling.

3.2 REFERENCES

- A. American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) 52.2 - Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.
- B. Sheet Metal and Air Conditioning Manufacturer's Association International (SMACNA) - IAQ Guidelines for Occupied Buildings Under Construction.
- C. U.S. Green Building Council (USGBC) - Leadership in Energy and Environmental Design (LEED) 2009 - Green Building Rating System for New Construction and Major Renovations.

3.3 SUBMITTALS

- A. Indoor Air Quality Management Plan:
 - 1. Submit Indoor Air Quality Management Plan for review within 30 days after date of Notice to Proceed. Include:
 - a. Procedures for implementing requirements of SMACNA IAQ Guideline.
 - b. Substitution procedures for products that are responsibility of Contractor and proposed source control implementation measures to minimize building contamination.
 - c. Construction sequencing and storage plans for protection of stored on-site or installed absorptive materials against moisture absorption and contamination.
 - d. Filter media change schedule and Product Data for filters including MERV ratings.
 - e. Name and phone number of Contractor's personnel responsible for instructing workers and overseeing and documenting results of Indoor Air Quality Management Plan.
 - 2. Submit electronically in Adobe PDF format.
 - 3. If required, revise and resubmit plan within ten days after receipt of comments.
 - 4. Distribute copies of approved Indoor Air Quality Management Plan to concerned parties.

- B. Photographs: Document indoor air quality management measures with date-stamped photographs including protection of ducts, on-site storage, and protection of installed absorptive materials.
- C. Indoor Air Quality Testing Report showing results of air quality testing.

3.4 QUALITY ASSURANCE

- A. Review and discuss Indoor Air Quality Management Plan implementation and progress at Preconstruction Conference and Progress Meetings.

3.5 DELIVERY, STORAGE AND HANDLING

- A. Designate specific storage areas to facilitate protection of stored absorptive materials.
- B. Clearly identify storage area. Keep clean and orderly; prevent contamination of materials.
- C. Monitor storage areas for contamination; correct problems and implement preventative measures.

3.6 TRAINING

- A. Provide training of indoor air quality management methods to be used at appropriate stages of Project.
- B. Require participation of all subcontractors.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 IMPLEMENTATION - DURING CONSTRUCTION

- A. Meet or exceed SMACNA minimum requirements for heating, ventilating, and air conditioning system protection, source control, pathway interruption, housekeeping, and scheduling.
- B. Protect stored on-site or installed absorptive materials from moisture damage and volatile organic compound contamination through construction sequencing and proper storage.
- C. If air handlers are used during construction, use filtration media with Minimum Efficiency Reporting Value (MERV) of 8 per ASHRAE 52.2.
- D. Replace filtration media just prior to occupancy.
- E. Heating, Ventilating, and Air Conditioning System Protection:

1. Keep duct systems including supply air, return air, and exhaust air and associated equipment including air handlers, variable air volume boxes, silencers, fans, and filter boxes, clean and uncontaminated.
2. Seal taps and open ends not actively being worked on with plastic and tape.
3. Provide 1 inch polyester filter media over return and exhaust air inlets during construction and until Substantial Completion.
4. Ensure that temporary and permanent filters are in place and openings are closed before running fans.
5. Protect existing heating, ventilating, and air conditioning systems with 1 inch polyester media installed over outside air intakes. Change out filter media on intakes to minimize pressure drops. Provide frequent filter change out to keep filter pressure drop at existing fan-coils below approximately 0.30 inch s.p.

F. Source Control:

1. For temporary and ancillary materials used in construction, follow requirements of similar products to minimize indoor air quality impacts.
2. Use nontoxic formulations and implement other control measures to minimize building contamination.

G. Pathway Interruption: Isolate areas where work is being performed to prevent contamination of clean and occupied spaces.

H. Housekeeping:

1. Implement cleaning activities concentrating on heating, ventilating, and air conditioning systems and building space to remove contaminants prior to occupancy.
2. Protect materials from weather and store in clean area prior to unpacking..
3. Clean coils, air filters, and fans before performing testing and balancing.
4. Provide temporary walkoff mats at entry points to construction areas; replace or clean daily.

I. Scheduling:

1. Sequence construction activities to reduce absorption of and volatile organic compounds by materials.
2. Complete applications of wet and odorous materials before installing absorptive materials.

3.2 IMPLEMENTATION - BEFORE OCCUPANCY

- A. Replace filtration media after final cleaning.
- B. Complete air testing and balancing prior to beginning baseline air testing.

END OF SECTION

SECTION 01400 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include the following:
 - 1. Division 1 Section "Allowances" for testing and inspecting allowances.
 - 2. Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
 - 3. Divisions 2 through 17 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size, physical example assemblies to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Mockups establish the standard by which the Work will be judged.

- D. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.4 DELEGATED DESIGN

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

1.5 REGULATORY REQUIREMENTS

- A. Copies of Regulations: Obtain copies of the following regulations and retain at Project site to be available for reference by parties who have a reasonable need:

1.6 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.
- C. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Description of test and inspection.
 - 3. Identification of applicable standards.
 - 4. Identification of test and inspection methods.
 - 5. Number of tests and inspections required.
 - 6. Time schedule or time span for tests and inspections.
 - 7. Entity responsible for performing tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.
- D. Reports: Prepare and submit certified written reports that include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.

9. Test and inspection results and an interpretation of test results.
 10. Ambient conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- E. Permits, Licenses, and Certificates: For Owner'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.

1.7 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- C. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- D. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirement for specialists shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade-union jurisdictional settlements and similar conventions.
- G. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.
- H. Preconstruction Testing: Testing agency shall perform preconstruction testing for compliance with specified requirements for performance and test methods.
1. Contractor responsibilities include the following:

- a. Provide test specimens and assemblies representative of proposed materials and construction. Provide sizes and configurations of assemblies to adequately demonstrate capability of product to comply with performance requirements.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Fabricate and install test assemblies using installers who will perform the same tasks for Project.
 - d. When testing is complete, remove assemblies; do not reuse materials on Project.
 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- I. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 2. Notify Architect **seven** days in advance of dates and times when mockups will be constructed.
 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 6. Demolish and remove mockups when directed, unless otherwise indicated.

1.8 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.
 2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders.
 3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents **will be charged to Contractor**, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.
1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ the same entity engaged by Owner, unless agreed to in writing by Owner.
 2. Notify testing agencies at least **24** hours in advance of time when Work that requires testing or inspecting will be performed.

3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Special Tests and Inspections: Owner will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.
1. Testing agency will notify Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to Architect, with copy to Contractor and to authorities having jurisdiction.
 3. Testing agency will submit a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 5. Testing agency will retest and reinspect corrected work.
- D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.
- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.
- F. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
 5. Do not perform any duties of Contractor.
- G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field-curing of test samples.
 5. Delivery of samples to testing agencies.

6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within thirty calendar days of date established for **the Notice to Proceed**.
1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
 2. Comply with the Contract Document requirements for Division 1 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01400

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.
- B. Temporary utilities include, but are not limited to, the following:
 - 1. Sewers and drainage.
 - 2. Water service and distribution.
 - 3. Sanitary facilities, including toilets, wash facilities, and drinking-water facilities.
 - 4. Heating and cooling facilities.
 - 5. Ventilation.
 - 6. Electric power service.
 - 7. Lighting.
 - 8. Telephone service.
- C. Support facilities include, but are not limited to, the following:
 - 1. Temporary roads and paving.
 - 2. Dewatering facilities and drains.
 - 3. Project identification and temporary signs.
 - 4. Waste disposal facilities.
 - 5. Field offices.
 - 6. Storage and fabrication sheds.
 - 7. Lifts and hoists.
 - 8. Temporary stairs.
 - 9. Construction aids and miscellaneous services and facilities.
- D. Security and protection facilities include, but are not limited to, the following:
 - 1. Environmental protection.
 - 2. Stormwater control.
 - 3. Tree and plant protection.
 - 4. Pest control.
 - 5. Site enclosure fence.
 - 6. Security enclosure and lockup.
 - 7. Barricades, warning signs, and lights.
 - 8. Covered walkways.
 - 9. Temporary enclosures.
 - 10. Temporary partitions.
 - 11. Fire protection.

- E. Related Sections include the following:
1. Division 1 Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
 2. Division 1 Section "Execution Requirements" for progress cleaning requirements.
 3. Division 2 Section "Termite Control" for pest control.
 4. Division 2 Section "Asphalt Paving" for construction and maintenance of asphalt paving for temporary roads and paved areas.
 5. Divisions 2 through 17 for temporary heat, ventilation, and humidity requirements for products in those Sections.

1.3 DEFINITIONS

- A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 USE CHARGES

- A. General: Cost or use charges for temporary facilities are not chargeable to Owner or Architect and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:
1. Owner's construction forces.
 2. Occupants of Project.
 3. Architect.
 4. Testing agencies.
 5. Personnel of authorities having jurisdiction.
- B. Water Service: Use water from Owner's existing water system without metering and without payment of use charges.
- C. Electric Power Service: Use electric power from Owner's existing system without metering and without payment of use charges.

1.5 SUBMITTALS – Not Used

1.6 QUALITY ASSURANCE

- A. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.
1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
 2. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.7 PROJECT CONDITIONS

- A. Temporary Utilities: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service.
 - 1. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.
- B. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:
 - 1. Keep temporary services and facilities clean and neat.
 - 2. Relocate temporary services and facilities as required by progress of the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Architect. Provide materials suitable for use intended.
- B. Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with galvanized barbed-wire top strand.
- C. Water: Potable.

2.2 EQUIPMENT

- A. General: Provide equipment suitable for use intended.
 - 1. Field Offices: Prefabricated Mobile units with lockable entrances, operable windows, and serviceable finishes; heated and air conditioned; on foundations adequate for normal loading.
- B. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.
- C. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- D. Drinking-Water Fixtures: Containerized, tap-dispenser, bottled-water drinking-water units, including paper cup supply.
- E. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use for type of fuel being consumed.
- F. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.
- G. Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. 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 or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Engage appropriate local utility company to connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.
 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
 2. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.
 3. Obtain easements to bring temporary utilities to Project site where Owner's easements cannot be used for that purpose.
- B. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.
 1. Filter out excessive soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
 2. Connect temporary sewers to municipal system as directed by sewer department officials.
 3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. After heavy use, restore normal conditions promptly.
 4. Provide temporary filter beds, settlement tanks, separators, and similar devices to purify effluent to levels acceptable to authorities having jurisdiction.

Community Center Addition and Renovations
Gulf Breeze, Florida

- C. Water Service: Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
 - 1. Provide rubber hoses as necessary to serve Project site.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.
 - 1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
 - 2. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy.
 - 3. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel who handle materials that require wash up. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled.
 - a. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.
 - 4. Drinking-Water Facilities: Provide bottled-water, drinking-water units.
- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed.
 - 1. Maintain a minimum temperature of 50 deg F in permanently enclosed portions of building for normal construction activities, and 65 deg F for finishing activities and areas where finished Work has been installed.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
- G. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnecting means, automatic ground-fault interrupters, and main distribution switchgear.
 - 1. Install electric power service underground, unless overhead service must be used.
 - 2. Install power distribution wiring overhead and rise vertically where least exposed to damage.
 - 3. Connect temporary service to Owner's existing power source, as directed by electric company officials.
- H. Electric Power Service: Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.
- I. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.

1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
 2. Provide warning signs at power outlets other than 110 to 120 V.
 3. Provide metal conduit, tubing, or metallic cable for wiring exposed to possible damage. Provide rigid steel conduits for wiring exposed on grades, floors, decks, or other traffic areas.
 4. Provide metal conduit enclosures or boxes for wiring devices.
 5. Provide 4-gang outlets, spaced so 100-foot extension cord can reach each area for power hand tools and task lighting. Provide a separate 125-V ac, 20-A circuit for each outlet.
- J. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions.
1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
 2. Provide one 100-W incandescent lamp per 500 sq. ft., uniformly distributed, for general lighting, or equivalent illumination.
 3. Provide one 100-W incandescent lamp every 50 feet in traffic areas.
 4. Provide one 100-W incandescent lamp per story in stairways and ladder runs, located to illuminate each landing and flight.
 5. Install exterior-yard site lighting that will provide adequate illumination for construction operations, traffic conditions, and signage visibility when the Work is being performed.
- K. Telephone Service: Provide temporary telephone service throughout construction period for common-use facilities used by all personnel engaged in construction activities. Install separate telephone line for each field office and first-aid station.
1. Provide additional telephone lines for the following:
 - a. In field office with more than two occupants, install a telephone for each additional occupant or pair of occupants.
 - b. Provide a dedicated telephone line for each facsimile machine and computer with modem in each field office.
 2. At each telephone, post a list of important telephone numbers.
 - a. Police and fire departments.
 - b. Ambulance service.
 - c. Contractor's home office.
 - d. Architect's office.
 - e. Engineers' offices.
 - f. Owner's office.
 - g. Principal subcontractors' field and home offices.
 3. Provide an answering machine or voice-mail service on superintendent's telephone.
 4. Provide a portable cellular telephone for superintendent's use in making and receiving telephone calls when away from field office.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:

Community Center Addition and Renovations
Gulf Breeze, Florida

1. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access.
 2. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet of building lines. Comply with NFPA 241.
 3. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate to support loads and to withstand exposure to traffic during construction period. Locate temporary roads and paved areas in same location as permanent roads and paved areas. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
 2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Division 2 Section "Earthwork."
 3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
 4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Division 2 Section "Hot-Mix Asphalt Paving."
- C. Traffic Controls: Provide temporary traffic controls at junction of temporary roads with public roads. Include warning signs for public traffic and "STOP" signs for entrance onto public roads. Comply with requirements of authorities having jurisdiction.
- D. Dewatering Facilities and Drains: Comply with requirements in applicable Division 2 Sections for temporary drainage and dewatering facilities and operations not directly associated with construction activities included in individual Sections. Where feasible, use same facilities. Maintain Project site, excavations, and construction free of water.
1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining property nor endanger permanent Work or temporary facilities.
 2. Before connection and operation of permanent drainage piping system, provide temporary drainage where roofing or similar waterproof deck construction is completed.
- E. Project Identification and Temporary Signs: Prepare Project identification and other signs in sizes indicated. Install signs where indicated to inform public and persons seeking entrance to Project. Do not permit installation of unauthorized signs.
1. Engage an experienced sign painter to apply graphics for Project identification signs. Comply with details indicated.
 2. Prepare temporary signs to provide directional information to construction personnel and visitors.
 3. Construct signs of exterior-type Grade B-B high-density concrete form overlay plywood in sizes and thicknesses indicated. Support on posts or framing of preservative-treated wood or steel.
 4. Paint sign panel and applied graphics with exterior-grade alkyd gloss enamel over exterior primer.
- F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or

unsanitary waste materials separately from other waste. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.

1. If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material to be deposited.
- G. Common-Use Field Office: Provide an insulated, weathertight, air-conditioned field office for use as a common facility by all personnel engaged in construction activities; of sufficient size to accommodate required office personnel and meetings of 10 persons at Project site. Keep office clean and orderly.
1. Furnish and equip offices as follows:
 - a. Desk and four chairs, four-drawer file cabinet, a plan table, a plan rack, and bookcase.
 - b. Water cooler and private toilet complete with water closet, lavatory, and medicine cabinet with mirror.
 - c. Coffee machine and supplies, including regular and decaffeinated coffee, filters, cups, stirring sticks, creamer, sugar, and sugar substitute.
- H. Lifts and Hoists: Provide facilities for hoisting materials and personnel. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- I. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate. Cover finished, permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near Project site.
- B. Stormwater Control: Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of stormwater from heavy rains.
- C. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from construction damage. Protect tree root systems from damage, flooding, and erosion.
- D. Pest Control: Before deep foundation work has been completed, retain a local exterminator or pest-control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Engage this pest-control service to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.
- E. Site Enclosure Fence: Before construction operations begin, install chain-link enclosure fence with lockable entrance gates. Locate where indicated, or enclose entire Project site or portion

determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering site except by entrance gates.

1. Set fence posts in in concrete bases.
 2. Provide gates in sizes and at locations necessary to accommodate delivery vehicles and other construction operations.
 3. Maintain security by limiting number of keys and restricting distribution to authorized personnel.
- F. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.
1. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch- thick exterior plywood.
 2. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 3. Vertical Openings: Close openings of 25 sq. ft. or less with plywood or similar materials.
 4. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
 5. Where temporary wood or plywood enclosure exceeds 100 sq. ft. in area, use fire-retardant-treated material for framing and main sheathing.
- G. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
1. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.
 - a. Field Offices: Class A stored-pressure water-type extinguishers.
 - b. Other Locations: Class ABC dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for exposures.
 - c. Locate fire extinguishers where convenient and effective for their intended purpose; provide not less than one extinguisher on each floor at or near each usable stairwell.
 2. Store combustible materials in containers in fire-safe locations.
 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting. Prohibit smoking in hazardous fire-exposure areas.
 4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
 5. Permanent Fire Protection: At earliest feasible date in each area of Project, complete installation of permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
 6. Develop and supervise an overall fire-prevention and first-aid fire-protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

7. Provide hoses for fire protection of sufficient length to reach construction areas. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.
 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
 2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Temporary Facility Changeover: Except for using permanent fire protection as soon as available, do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 1. Materials and facilities that constitute temporary facilities are the property of Contractor. Owner reserves right to take possession of Project identification signs.
 2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 3. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Division 1 Section "Closeout Procedures."

END OF SECTION 01500

SECTION 01600 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following administrative and procedural requirements: selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
- B. Related Sections include the following:
 - 1. Division 1 Section "Allowances" for products selected under an allowance.
 - 2. Division 1 Section "Alternates" for products selected under an alternate.
 - 3. Division 1 Section "References" for applicable industry standards for products specified.
 - 4. Division 1 Section "Closeout Procedures" for submitting warranties for contract closeout.
 - 5. Divisions 2 through 17 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility, **except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise.** Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

- D. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
- E. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

1.4 SUBMITTALS

- A. Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
 - 1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
 - 2. Form: Tabulate information for each product under the following column headings:
 - a. Specification Section number and title.
 - b. Generic name used in the 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.
 - h. Identification of items that require early submittal approval for scheduled delivery date.
 - 3. Initial Submittal: Within **30** days after date of commencement of the Work, submit **3** copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 - a. At Contractor's option, initial submittal may be limited to product selections and designations that must be established early in Contract period.
 - 4. Completed List: Within **60** days after date of commencement of the Work, submit **3** copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 - 5. Architect's Action: Architect will respond in writing to Contractor within **15** days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement that products comply with the Contract Documents.
- B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified material or product cannot be provided.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.

- c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 - i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within **15** days of receipt of request, or **7** days of receipt of additional information or documentation, whichever is later.
- a. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.
- C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
- 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. 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.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 5. Store products to allow for inspection and measurement of quantity or counting of units.
 6. Store materials in a manner that will not endanger Project structure.
 7. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
 8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 9. Protect stored products from damage.
- B. Storage: Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: Forms are included with the Specifications. Prepare a written document using appropriate form properly executed.
 3. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, that are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures: Procedures for product selection include the following:

1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer, provide the product named.
 - a. Substitutions may be considered, **unless otherwise indicated**.
2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product by the manufacturer or from the source named that complies with requirements.
 - a. Substitutions may be considered, **unless otherwise indicated**.
3. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
 - a. Substitutions may be considered, **unless otherwise indicated**.
4. Manufacturers: Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
 - a. Substitutions may be considered, **unless otherwise indicated**.
5. Available Products: Where Specification paragraphs or subparagraphs titled "Available Products" introduce a list of names of both products and manufacturers, provide one of the products listed or another product that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
6. Available Manufacturers: Where Specification paragraphs or subparagraphs titled "Available Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed or another manufacturer that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
7. Product Options: Where Specification paragraphs titled "Product Options" indicate that size, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide either the specific product or system indicated or a comparable product or system by another manufacturer. Comply with provisions in "Product Substitutions" Article.
8. Basis-of-Design Products: Where Specification paragraphs or subparagraphs titled "Basis-of-Design Products" are included and also introduce or refer to a list of manufacturers' names, provide either the specified product or a comparable product by

one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

- a. Substitutions **may** be considered, **unless otherwise indicated**.
9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product (and manufacturer) that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches satisfactorily.
 - a. If no product available within specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents on "substitutions" for selection of a matching product.
 10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements.
 - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that does not include premium items.
 - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that includes both standard and premium items.
 11. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division 1 for allowances that control product selection and for procedures required for processing such selections.

2.2 PRODUCT SUBSTITUTIONS

- A. Timing: Architect will consider requests for substitution if received within **60** days after **the Notice to Proceed**. Requests received after that time may be considered or rejected at discretion of Architect.
- B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 2. Requested substitution does not require extensive revisions to the Contract Documents.
 3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 4. Substitution request is fully documented and properly submitted.
 5. Requested substitution will not adversely affect Contractor's Construction Schedule.
 6. Requested substitution has received necessary approvals of authorities having jurisdiction.
 7. Requested substitution is compatible with other portions of the Work.

8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.
10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

2.3 COMPARABLE PRODUCTS

- A. Where products or manufacturers are specified by name, submit the following, in addition to other required submittals, to obtain approval of an unnamed product:
 1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01600

SECTION 01700 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 SUBMITTALS

- A. Certified Surveys: Submit two copies signed by **land surveyor**.

1.4 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - a. Description of the Work.
 - b. List of detrimental conditions, including substrates.
 - c. List of unacceptable installation tolerances.
 - d. Recommended corrections.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to **local utility and Owner** that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify **Owner** not less than 72 hours in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions **Owner's** written permission.
- C. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

- D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a **Registered Land Surveyor** to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 3. Check the location, level and plumb, of every major element as the Work progresses.
 - 4. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
 - 5. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
 - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Benchmarks: Establish and maintain a minimum of **two** permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 1. Make vertical work plumb and make horizontal work level.
 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
 4. Maintain minimum headroom clearance of **8 feet** in spaces without a suspended ceiling.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 2. Allow for building movement, including thermal expansion and contraction.
- G. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- H. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 OWNER-INSTALLED PRODUCTS

- A. Site Access: Provide access to Project site for Owner's construction forces.
- B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction forces.
 1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.

2. Preinstallation Conferences: Include Owner's construction forces at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction forces if portions of the Work depend on Owner's construction.

3.7 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.
 1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.
- H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

- K. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01700

SECTION 01732 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of selected portions of building or structure.
 - 2. Demolition and removal of selected site elements.
 - 3. Salvage of existing items to be reused or recycled.
- B. See Division 1 Section "Construction Waste Management" for disposal of demolished materials.
- C. See Division 2 Section "Site Clearing" for site clearing and removal of above- and below-grade improvements.

1.2 DEFINITIONS

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

1.3 SUBMITTALS

- A. Schedule of Selective Demolition Activities: Indicate detailed sequence of selective demolition and removal work, with starting and ending dates for each activity, interruption of utility services, use of elevator and stairs, and locations of temporary partitions and means of egress.
- B. Predemolition [**Photographs**] [or] [**Videotapes**]: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Comply with Division 1 Section "Photographic Documentation." Submit before Work begins.

- C. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.
 - 1. Comply with submittal requirements in Division 1 Section "Construction Waste Management."

1.4 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.
- C. LEED Requirements for Building Reuse:
 - 1. Credit MR 1.1 **and** 1.2: Maintain existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing, excluding window assemblies and nonstructural roofing material) not indicated to be demolished; do not demolish such existing construction beyond indicated limits.
 - 2. Credit MR 1.3: Maintain existing interior nonstructural elements (interior walls, doors, floor coverings, and ceiling systems) not indicated to be demolished; do not demolish such existing construction beyond indicated limits.
- D. Regulatory Requirements: Comply with governing EPA/FDEP notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- E. Standards: Comply with ANSI A10.6 and NFPA 241.

1.5 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.

- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.6 WARRANTY

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
- B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Arrange to shut off indicated utilities with utility companies.
 - 2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

3.3 PREPARATION

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

3.4 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain **fire watch and** portable fire-suppression devices during flame-cutting operations.
 - 4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 5. Dispose of demolished items and materials promptly. **Comply with requirements in Division 1 Section "Construction Waste Management."**
- B. Reuse of Building Elements: Project has been designed to result in end-of-Project rates for reuse of building elements as follows. Do not demolish building elements beyond what is indicated on Drawings without Architect's approval.
 - 1. Building Structure and Shell: **75** percent.
 - 2. Nonshell Elements: 50 percent.
- C. Removed and Reinstalled Items:
 - 1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.

2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition **and cleaned** and reinstalled in their original locations after selective demolition operations are complete.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be **recycled**, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
1. Comply with requirements specified in Division 1 Section "Construction Waste Management."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.6 CLEANING

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

END OF SECTION 01732

SECTION 01741 - CONSTRUCTION WASTE MANAGEMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Construction waste management goals, plan, and records.

1.2 WASTE MANAGEMENT GOALS

- A. Reuse, salvage, or recycle non-hazardous waste materials.
- B. Minimize waste sent to landfills and incinerators.
- C. Prioritize non-hazardous construction waste management in following order:
 - 1. Reduce amount of waste generated.
 - 2. Reuse material through on-site reuse or off-site salvaging, including sale or donation.
 - 3. Recycle material including diverting materials for secondary uses whenever economically feasible.
 - 4. Dispose of materials with no practical use or economic benefit at landfill.
- D. Divert minimum 50 percent of construction waste by weight (in tons) or volume (in cubic yards) from landfills and incinerators.
- E. Calculations may be performed using weight or volume but must be consistent throughout Project.

1.3 WASTE MANAGEMENT

- A. Pro-actively manage construction and demolition waste:
 - 1. Practice efficient waste management when sizing, cutting, and installing products.
 - 2. Use all reasonable means to divert construction and demolition waste from landfills and incinerators, and to facilitate recycling and reuse.
 - 3. Return unused products and overages to supplier, or donate to non-profit group.
 - 4. Carefully install products; avoid removal of ill-timed and poorly installed products.
 - 5. Use centralized cutting areas to facilitate waste collection.
 - 6. Deliver, store, and handle products to prevent damage.
- B. Require subcontractors and suppliers to participate in waste management efforts.
- C. Construction waste includes:
 - 1. Products from demolition and removal, excluding excavated soil and land-clearing debris.
 - 2. Excess and unusable construction products.
 - 3. Packaging materials for construction products.
 - 4. Other materials generated during construction process but not incorporated into the Work.
- D. Give consideration to:

1. Availability of viable recycling markets.
 2. Condition of materials.
 3. Ability to provide material in suitable condition and in quantities acceptable to available markets.
 4. Time constraints imposed by internal project completion mandates.
- E. Be responsible for implementation of special programs involving rebates and similar incentives related to recycling of waste.
- F. Revenues and other savings obtained for salvage and recycling accrue to Contractor.
- G. Ensure that firms and facilities used for recycling, reuse, and disposal have legal permits for intended uses.

1.4 SUBMITTALS

- A. Waste Management Plan:
1. Submit waste management plan within ten days after Notice to Proceed and prior to initiating site preparation.
 2. Include:
 - a. Name of individual on Contractor's staff responsible for waste prevention and management.
 - b. Actions proposed to reduce solid waste generation and achieve waste management goal.
 - c. Description of proposed methods for recycling and reuse of materials generated, including areas and equipment for processing, sorting, and temporary storage.
 - d. Estimated types and quantities of waste to be generated.
 - e. Name of landfills and incinerators to be used.
 - f. Identification of local and regional reuse programs that will accept waste materials.
 - g. List of waste materials to be salvaged for resale, salvaged and reused, or recycled. Identify recycling facilities to be used.
 - h. Identification of materials that cannot be recycled or reused, with justification.
 3. Submit electronically in Adobe PDF format.
 4. If required, revise and resubmit plan within ten days after receipt of comments.
 5. Distribute copies of approved Waste Management Plan to concerned parties.
 6. Update Waste Management Plan periodically through duration of Project to reflect changed conditions.
- B. Sustainable Design Record Documents:
1. Maintain records to document:
 - a. Quantities of waste generated, in tons or cubic yards.
 - b. Types and quantities of materials diverted through sale, reuse, or recycling, in tons or cubic yards, and diversion location.
 - c. Quantities of waste sent to landfill or incinerator, in tons or cubic yards.
 2. Submit summary of waste disposal and diversion to date along with each Application for Payment.
 3. Submit hauling receipts or certificates for diverted and recycled materials including material description, hauler name and location, and quantity (by weight) of diverted and recycled materials.

4. Deliver final summary of solid waste disposal and diversion to Architect upon completion of project.
5. Submit electronically in Adobe PDF format.

1.5 QUALITY ASSURANCE

- A. Review and discuss waste management plan implementation and progress at Preconstruction Conference and Progress Meetings.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Designate separate areas to facilitate separation of materials for potential recycling, salvage, reuse and return.
- B. Clearly identify areas and receptacles.
- C. Keep storage areas and receptacles clean and orderly; prevent contamination of materials.
- D. Monitor storage areas; correct problems and implement preventative measures.

1.7 TRAINING

- A. Provide training of waste management methods to be used at appropriate stages of Project.
- B. Require participation of all subcontractors.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 WASTE COLLECTION

- A. Provide containers and storage areas to facilitate waste management, clearly identified.
- B. Handle recyclable materials to prevent contamination by incompatible products and materials.
- C. Separate materials by:
 1. Placing into marked separate containers, then transporting to recycling facility.

3.2 DISPOSAL

- A. Dispose of nonhazardous waste materials that cannot be reused, recycled, or salvaged at licensed landfill or incinerator.
- B. Handle, store, and dispose of hazardous wastes in accordance with applicable codes, ordinances, rules, and regulations.

END OF SECTION

SECTION 01810 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general requirements that apply to implementation of commissioning without regard to specific systems, assemblies, or components.

1.2 DEFINITIONS

- A. BoD: Basis of Design. A document that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.
- B. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.
- C. CxA: Commissioning Authority.
- D. OPR: Owner's Project Requirements. A document that details the functional requirements of a project and the expectations of how it will be used and operated. These include Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.
- E. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.

1.3 COMMISSIONING TEAM

- A. Members Appointed by Contractor(s): Individuals, each having the authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated action. The commissioning team shall consist of, but not be limited to, representatives of **each** Contractor, including Project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.
- B. Members Appointed by Owner:
 - 1. CxA: The designated person, company, or entity that plans, schedules, and coordinates the commissioning team to implement the commissioning process. Owner will engage the CxA under a separate contract.
 - 2. Representatives of the facility user and operation and maintenance personnel.
 - 3. Architect and engineering design professionals.

1.4 OWNER'S RESPONSIBILITIES

- A. Provide the OPR documentation to the CxA and **each** Contractor for information and use.

- B. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities.
- C. Provide the BoD documentation, prepared by Architect and approved by Owner, to the CxA and **each** Contractor for use in developing the commissioning plan, systems manual, and operation and maintenance training plan.

1.5 **EACH** CONTRACTOR'S RESPONSIBILITIES

- A. **Each** Contractor shall assign representatives with expertise and authority to act on its behalf and shall schedule them to participate in and perform commissioning process activities including, but not limited to, the following:
 - 1. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
 - 2. Cooperate with the CxA for resolution of issues recorded in the Issues Log.
 - 3. Attend commissioning team meetings held on a **monthly** basis.
 - 4. Integrate and coordinate commissioning process activities with construction schedule.
 - 5. Review and accept construction checklists provided by the CxA.
 - 6. Complete **electronic** construction checklists as Work is completed and provide to the Commissioning Authority on a **weekly** basis.
 - 7. Review and accept commissioning process test procedures provided by the Commissioning Authority.
 - 8. Complete commissioning process test procedures.

1.6 CxA'S RESPONSIBILITIES

- A. Organize and lead the commissioning team.
- B. Provide commissioning plan.
- C. Convene commissioning team meetings.
- D. Provide Project-specific construction checklists and commissioning process test procedures.
- E. Verify the execution of commissioning process activities using random sampling. The sampling rate may vary from 1 to 100 percent. Verification will include, but is not limited to, equipment submittals, construction checklists, training, operating and maintenance data, tests, and test reports to verify compliance with the OPR. When a random sample does not meet the requirement, the CxA will report the failure in the Issues Log.
- F. Prepare and maintain the Issues Log.
- G. Prepare and maintain completed construction checklist log.
- H. Witness systems, assemblies, equipment, and component startup.
- I. Compile test data, inspection reports, and certificates; include them in the systems manual and commissioning process report.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01810

SECTION 01811 - SUSTAINABLE DESIGN REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Sustainable design and construction practices.
- B. Related Sections:
 - 1. Section 01332 - Sustainable Design Reporting.
 - 2. Section 01354 - Indoor Air Quality Management.
 - 3. Section 01741 - Construction Waste Management.
 - 4. Section 01910 - Commissioning.

1.2 REFERENCES

- A. U.S. Green Building Council (USGBC) - Leadership in Energy and Environmental Design (LEED) 2009 - Green Building Rating System for New Construction and Major Renovations.

1.3 SUSTAINABLE DESIGN GOAL

- A. Requirements have been developed for this project to enable LEED sustainable design points to be attained.
- B. Obtain Architect's approval of substitution, change, or alteration of sustainable products and installation prior to incorporation into Project.
- C. This project will be submitted for LEED certification. Goal for this project is Certified - 40 to 49 points.
- D. Perform work to conform to LEED requirements.
- E. Assist Architect in developing project LEED certification application.
- F. Provide submittals required to document conformance to LEED criteria.
- G. Where product choices are available, give preference to:
 - 1. Materials having recycled content.
 - 2. Reused materials.
 - 3. Regional materials.
 - 4. Rapidly renewable materials.
 - 5. Low-emitting materials.

1.4 SUBMITTALS

- A. Construction Waste Management Plan: Refer to Section 01741.
- B. Sustainable Design Action Plan: Refer to Section 01332.

- C. Sustainable Design Cost Data Submittals: Refer to Section 01332.
- D. Sustainable Design Submittals: Refer to Section 01332.
- E. Indoor Air Quality Management Plan: Refer to Section 01354.

1.5 QUALITY ASSURANCE

- A. Employ a LEED-Accredited Professional with minimum 1 year experience to perform specified functions related to LEED certification of project.
- B. Designate personnel on Contractor's staff responsible for instructing workers and overseeing and documenting results of sustainable design requirements for Project.
- C. Participation: Require compliance with sustainable design requirements by subcontractors, sub-subcontractors, and suppliers.
- D. Perform indoor air quality management in accordance with Section 01354.
- E. Perform construction waste management in accordance with Section 01741.
- F. Perform commissioning in accordance with Section 01910

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 02000 - SOILS REPORT

PART 1 GENERAL

1.1 CONDITIONS AND REQUIREMENTS

- A. The General Conditions, Supplementary Conditions and Division-1 General Requirements apply.

1.2 SOILS REPORT

- A. The attached soils report indicates soils and subsurface conditions that can be anticipated at the project site.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION 02000



May 23, 2011

File #11-143

Report of Geotechnical Exploration
For
Gulf Breeze Recreation Center Addition
Gulf Breeze, Florida

FOR: Mr. Steve Jernigan
Bay Design Associates, PL
720 Bayfront Parkway, Suite 200
Pensacola, Florida 32502

TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 SITE AND PROJECT CONDITIONS	1
3.0 SUBSURFACE EXPLORATION	1
4.0 SUBSURFACE CONDITIONS	2
4.1 General Building Soil Conditions	2
4.2 General Stormwater Pond Soil Conditions	2
4.3 General Groundwater Conditions	2
5.0 LABORATORY TEST RESULTS	3
Table #1: Permeability Test Results Summary	3
6.0 DISCUSSION AND RECOMMENDATIONS	3
6.1 Basis of Recommendations	3
6.2 Summary and General Comments	4
6.3 Site Preparation Recommendations	4
6.3.1 Fill Recommendations	4
6.3.2 Earthwork Quality Control Testing	5
6.4 Building and Foundation Recommendations	5
6.4.1 Preloading Recommendations	5
6.4.2 Foundation Recommendations	6
6.5 Stormwater Pond Recommendations	6
Table #2: Summary of Stormwater Pond Design Parameters	7
Figure #1 - Boring Location Plan	8
Figure #2 - Boring Logs	9-10
Figure #3 - Grainsize	11

1.0 INTRODUCTION

This report forwards the results of our geotechnical exploration for the proposed **Gulf Breeze Recreation Center Addition** in Gulf Breeze, Florida. The purpose of this geotechnical exploration was to determine the general subsurface conditions in the proposed building and stormwater pond areas and use this information to provide recommendations for earthwork, foundation design, and stormwater pond design. Our exploration consisted of ten (10) Standard Penetration Test borings, a site visit by our engineering staff, classification of the samples obtained in the field, laboratory testing of selected soil samples, and analysis by our engineering staff.

2.0 SITE AND PROJECT CONDITIONS

The project site is the Gulf Breeze Recreation Center located at 800 Shoreline Drive in Gulf Breeze, Florida. At the time of drilling, the proposed building area was occupied by an existing tennis court surrounded by trees, concrete sidewalks, and a gravel parking lot/driveway to the east. According to the provided site plan, the south end of the proposed building area slopes from +16 feet down to the north to +13 feet, and most of the proposed building area is relatively level sloping from +12 feet down to +11 feet on the north end of the proposed building.

We understand that the project consists of the construction of a 25,000 square foot addition to the existing recreation center planned to the northeast of the existing building. The proposed building is planned to be a gymnasium with block walls, clear span trusses, and a steel roof, and the floor elevation is planned to match the existing building's floor elevation of +16.71 feet. Based on a conversation with the project's structural engineer, the proposed building has anticipated maximum wall loads on the order of 5 kips/foot with concentrated loads of 55 kips. We understand that footings are planned to bear 2 feet 4 inches to 2 feet 6 inches below finished floor. A stormwater pond is planned for this project to the north of the proposed building, and we understand that the pond is planned to be roughly 3 feet deep with a bottom elevation of +7 feet. Should this information change or be incorrect, the geotechnical engineer should be notified, and changes to our recommendations may be needed.

3.0 SUBSURFACE EXPLORATION

To examine the subsurface conditions in the proposed building area, we drilled six Standard Penetration Test (SPT) borings at the requested locations around the existing tennis court. Borings B-7 and B-9 were offset from the requested locations due to accessibility and utility concerns respectively. Four of these borings were drilled to 26 feet below grade and two borings were drilled to 41 feet below grade due to the significant proposed fill loads for this project. Four SPT borings were drilled to a depth of 16 feet below grade in the pond area. The Standard Penetration Test consists of driving a 2-inch diameter split spoon sampler into the ground using a 140-pound hammer dropped 30 inches. The number of blows required to drive the sampler one foot after seating it 6 inches is referred to as the blow count or "N" value and is considered a measure of the relative density of subsurface soils. "N" values can be found in **Figure #2** adjacent to the soil descriptions. Five SPT samples were taken to a depth of eleven feet, and the borings

were sampled at five-foot intervals thereafter. The SPT borings were drilled in general accordance with ASTM D1586 using a truck mounted drill rig, and the borings were advanced between sampling using flight auger above the groundwater table and the "mud" rotary drilling/jetting technique below the groundwater table with a Bentonite drilling mud. Each sample was removed from the sampler, classified in the field by the driller, and packaged for visual classification by our engineering staff and for laboratory testing. Two Shelby tube or relatively undisturbed thin-walled samples were taken from the stormwater pond borings for laboratory permeability testing.

4.0 SUBSURFACE CONDITIONS

Boring locations are shown in the attached **Figure #1** and should be considered approximate. The borings were located in the field using a handheld GPS navigator and existing site features. The subsurface conditions encountered in the borings are shown in **Figure #2** (2 pages), and descriptions of the soils encountered are accompanied by their Unified Classification symbol (SP, SM, etc.) based on a visual examination unless accompanied by laboratory results. Boundaries between soil layers and soil depths should be considered approximate, as the actual transition between soil layers may be gradual. Following are generalized summaries of the soil conditions encountered in the test borings. For a detailed description of the subsurface conditions and SPT readings encountered in the test borings, the reader is directed to **Figure #2**.

4.1 General Building Soil Conditions

Borings B-5 thru B-10 were drilled in the proposed building area and generally encountered brown/orange silty sand and slightly silty sand fill in the top 2-4.5 feet that was medium dense around the tennis court and loose to the north of the tennis court underlain by light tan/white very loose and loose sand to 4.5-7 feet. The borings continued with white and light to dark brown stained sand with some layers of silty sand and slightly silty sand that were medium dense to 13-18 feet and dense and very dense to the bottom of the 26-41 foot borings. An exception to this is boring B-9, which encountered black very loose sandy peat with wood/organics from 18-20.5 feet underlain by a 6-inch layer of dark brown very loose silty sand with organics and peat.

4.2 General Stormwater Pond Soil Conditions

Borings B-1 thru B-4 were drilled in the proposed stormwater pond area and generally encountered 2-7 inches of topsoil and fill over gray/white/tan medium dense sand to 2-3 feet where dark brown stained silty sand was encountered to 2.5-4 feet. Under the dark brown silty sand layers, tan/brown to white medium dense to dense sand with some small seams of dark brown stained silty sand was encountered to the bottom of the 16 foot borings. An exception to this is boring B-1, which encountered wood and dark brown loose sandy peat from 12 feet to the bottom of this boring at 16 feet.

4.3 General Groundwater Conditions

Groundwater was encountered in the building area (borings B-5 thru B-10) from 6-12 feet below grade and in the pond borings (B-1 thru B-4) from 5-7 feet below grade at the time of drilling.

Groundwater levels will vary with the amount of local rainfall and changes in site drainage characteristics and may be different at other times. A review of recent rainfall data from a nearby weather station indicates that the borings were drilled during a below normal rainfall period. The groundwater levels at the site are being controlled by the large pond to the north, and we understand that this pond has a control elevation designed to pop off when the pond gets to a certain level. The apparent high water line in this pond was roughly 1 foot above the existing water level at the time of drilling. Considering the effects of the pond and the high permeability soils at the site on the gradient, we estimate the water levels encountered at the time of drilling to be about 1 foot below the normal seasonal high groundwater level as controlled by the pond.

5.0 LABORATORY TEST RESULTS

Laboratory testing for this project consisted of basic properties tests run on selected split spoon samples to evaluate and document basic soil properties. In addition, one falling head permeability and grainsize analysis test was run on the Shelby tube sample obtained from boring B-4, as we understand that this boring is the closest to the selected pond location. The results of the basic properties tests are shown adjacent to the samples tested on the attached **Figure #2**. The results of the permeability test are summarized in the following **Table #1**. The results of the grainsize analysis test run on the permeability sample are plotted in **Figure #3**.

Table #1: Permeability Test Results Summary

Boring	Sample Depth (ft)	Sample Description	Dry Unit Weight (pcf)	Saturated Vertical Hydraulic Conductivity, K_{vs} (ft/day)	% Fines
B-4	5-6	Tan/Brown and White Fine Sand	97.0	54.6	0.8

6.0 DISCUSSION AND RECOMMENDATIONS

6.1 Basis of Recommendations

Recommendations rendered herein are based on assumed and/or design information available at the time of this report, the subsurface conditions encountered in the test borings, commonly accepted Geotechnical Engineering principles and practices, and experience with similar soil/groundwater conditions. Should final project design information differ from the design information used in this report or should any soil conditions not in this report be encountered during construction, our office should be notified and retained so that this report can be modified as needed.

Regardless of the care exercised in performing a Geotechnical Exploration, the possibility always exists that soil and/or groundwater conditions between the test borings will differ from those encountered at the specific boring locations. In addition, construction operations may alter the soil conditions. Therefore, it is recommended that a representative from Larry M. Jacobs & Associates, Inc. (LMJ) be involved throughout construction phases addressed in this report. Furthermore, considering our familiarity with the project, the subsurface conditions present, and the intent of the design and recommendations, we recommend that LMJ be retained to provide construction quality

control and testing services for this project so that the geotechnical engineer has direct involvement in the quality management during construction.

6.2 Summary and General Comments

The building borings generally encountered 2-4.5 feet of slightly silty sand fill underlain by sand soils with some silty sand and slightly silty sand layers that were loose and very loose to 4-7 feet, medium dense to 13-18 feet, and dense and very dense to the bottom of the borings at 26-41 feet. A layer of compressible peat was encountered in building boring B-9 from 18-20.5 feet. The stormwater pond boring drilled nearest to the selected pond location (B-4) encountered low permeability silty sand soils from the pond bottom depth of 3 feet to 4 feet underlain by high permeability sand soils to the bottom of this boring at 16 feet.

The compressible peat encountered in B-9 from 18-20.5 feet is a settlement concern for the proposed building, and we recommend preloading the building pad as described in this report to reduce the settlement effects on the proposed building. After the building area has been preloaded the building can be supported on conventional shallow spread footings and strip footings as described in this report. The following sections discuss site preparation, foundation, and stormwater pond recommendations.

6.3 Site Preparation Recommendations

All trees, vegetation, topsoil, major root systems, or any other deleterious materials present within the proposed building area should be cleared and stripped. In addition, the tennis court should be completely removed. After clearing and stripping, the existing ground surface in and to 5 feet beyond the proposed building area where practical should be compacted to a minimum of 95% of the soil's maximum density as determined by the Modified Proctor Test (ASTM D1557). We *do not* recommend using large vibratory compaction equipment for this project because it could damage the existing structure.

The borings encountered predominantly slightly silty sand fill over free draining sand soils, and the subgrade soils should be readily compactable but will require ample moisture to achieve compaction. The contractor may need to add water to dry soils to achieve compaction, and it is best to add water to dry soils before beginning compaction operations. Any areas that yield during compaction should be evaluated for underlying deleterious materials, and all deleterious materials should be removed and replaced with compactable fill material. Any wet areas that pump during compaction should be left alone and should dry out quickly given the high permeability underlying sand soils.

6.3.1 Fill Recommendations

Fill material needed to bring the site up to final grade should be sand (SP), slightly silty sand (SP/SM), or silty sand (SM) soils free of significant organic content or other deleterious materials. Fill should be placed near its optimum moisture content in maximum 10-inch loose lifts when compacted with heavy rollers, and in maximum 6-inch loose lifts when compacted with hand-

operated equipment. Note that silty sand soils are moisture sensitive and are more difficult to compact in wet weather conditions. The soils encountered in the stormwater pond borings are suitable for use as fill in the building area, provided they are free of organic or deleterious materials. Backfill for excavations made in the building area, such as for the placement of utilities, should be placed and compacted in the same manner as fill.

6.3.2 Earthwork Quality Control Testing

We recommend running in place density tests to verify compaction on the subgrade in the building area at a minimum frequency of one test per 2,500 square feet within structural limits. Compaction of fill material should be tested at the same frequency on every 12-inch increment of fill ending with the top of finished subgrade. Compaction of backfill for utility excavations should be tested on every other lift of fill ending with the top of finished subgrade at a minimum frequency of 1 test per 75 linear feet. We recommend that a representative from our office perform the density testing for this project to provide continuity to the project and to promote quality construction.

6.4 Building and Foundation Recommendations

One of the six building borings (B-9) encountered compressible peat soil, which is a settlement concern for the proposed building. Based on the information available, the extent of the peat is not clear, and nearby borings have encountered peat indicators, but these indicators have been erratic (i.e. encountered in some borings but not others). Because of the erratic and unpredictable nature of peat deposits, drilling additional borings may not accurately or reasonably define the extents of the peat. The best way to minimize settlement effects on the proposed building is to preload or surcharge the building area using the weight of fill.

In addition, we estimated settlements using the provided grading plan, the preliminary foundation plan and structural loading information, the conditions encountered in B-9, the results of basic laboratory testing, and our experience with similar soils. We estimate settlement from the proposed fill loads to be roughly 1.5 inches and settlement from the footing loads to be roughly ½ inch. This settlement is expected to be 100% differential from areas where no peat soils are present, and this amount of differential settlement is considered excessive for the proposed structure. Therefore, preloading the building pad area is advised.

6.4.1 Preloading Recommendations

Preloading is a process of surcharging and squeezing a compressible soil using a load, usually in the form of soil weight, to allow most of the potentially damaging settlements to occur before the structure is constructed. The height of the preload fill is determined based on the anticipated fill and structural loads. Based on the anticipated fill heights and reported structural loads, *we recommend placing a 4-foot high preload for this project in addition to the roughly five feet of fill planned in the building area.* After the site is filled to grade as described in this report, the preload fill may be placed. The preload fill should be placed and compacted to a minimum moist soil unit weight of 115 lbs/ft³, and the top edge of the preload should extend just beyond the edge of the proposed building and slope down to existing grade at a minimum 2H:1V slope. Note that the

heavier the soil, the less compaction required for the preload fill. *The entire preload should be left undisturbed at the site for a minimum of four weeks.* The author should be involved in the preload process and a representative from our office should monitor the placement of the preload and document the preload duration. The building area may be preloaded one half or one third at a time, with the top overlapping a minimum of 5 feet beyond the edge of the adjacent preloaded area, to minimize the amount of fill needed, but the preload must remain on each section a *minimum of 4 weeks* before being moved to another section of the building pad. Following preloading across the entire building area, the preload material should be removed from the site. We do not recommend leaving preload material stockpiled on the site, particularly adjacent to the building pad or existing building, as this material could induce additional settlements. A walk around the existing building did not indicate any obvious settlement cracking; however, if peat soils are present beneath the existing building, preloading for the addition could induce settlement under the existing structure.

6.4.2 Foundation Recommendations

The soils immediately beneath the footings for the proposed structure should be compacted for a minimum depth of 12 inches to a minimum of 95% of the soil's maximum density as determined by the Modified Proctor Test (ASTM D1557) using a large mechanical plate tamper. Compaction of the soils immediately beneath the footings will be critical to reducing immediate settlement from the sand soils immediately beneath the footings should be verified using in place density testing at a minimum frequency of one test per 75 linear feet of strip footing and on every other column footing.

If the site is prepared in accordance with the preceding recommendations and a representative from our company is able to verify these recommendations using in place density testing, footings for the proposed building may be designed for an allowable net soil bearing pressure of **1,000 pounds per square foot (psf)** which includes a reduction for flooding. Settlements from the sand soils immediately beneath the footings at this pressure are expected to be less than 1 inch, roughly half of which should occur during construction with the remaining settlement occurring during/following the first flooding. Note that the settlement from the sand soils immediately beneath the footings will be 100% differential with respect to the existing structure, and this should be considered in the structural design.

6.5 Stormwater Pond Recommendations

We understand that boring B-4 is nearest to the selected pond location, and that the pond bottom is planned to be about 3 feet below existing grade. Boring B-4 encountered low permeability dark brown stained silty sand from 3-4 feet, and we recommend removing this material from beneath the pond because, if left in place, it will significantly reduce the outflow from the pond. This material should be replaced with a clean, granular sand backfill having a minimum permeability (or saturated hydraulic conductivity) of 40 feet/day at 100% of the Standard Proctor density. A sample of the proposed backfill under the pond should be submitted to our office for testing and approval prior to shipment to the site. Assuming that the low permeability dark brown silty sand is removed

from beneath the pond, we calculate the equivalent effective vertical and horizontal hydraulic conductivity to exceed the maximum value allowed for design by the NFWFMD for fine grained soils, therefore we recommend using the maximum allowed value. Note that even though the low permeability dark brown silty sand material will be left in place around the perimeter of the pond, we calculate that this will have a minimal impact on saturated horizontal flow because the thickness of this layer is so small compared to the thickness of the aquifer in the horizontal saturated flow analysis. The fillable porosity of the native sand soils was calculated from the results of the unit weight test run on the Shelby tube sample. Our recommended parameters for stormwater pond design *assuming that the low permeability dark brown silty sand soils are removed from beneath the pond bottom* are provided in the following **Table #2**. Appropriate safety factors should be applied to the design of the proposed pond.

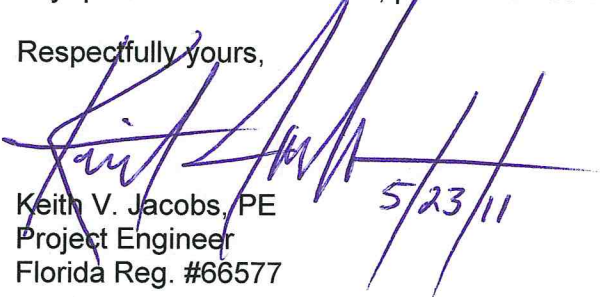
Table #2: Summary of Stormwater Pond Design Parameters

Saturated Vertical Hydraulic Conductivity (K_{vs}), (ft/day)	Saturated Horizontal Hydraulic Conductivity (K_{hs}), (ft/day)	Depth* to Confining Layer (ft)	ESHGT Depth* (ft)	Fillable Porosity
40	40	16	5.5	0.29

*Depth below grade at time of drilling, ESHGT = Estimated Seasonal High Groundwater Table

We hope that this report provides sufficient information for your current requirements. If you have any questions or comments, please do not hesitate to call.

Respectfully yours,

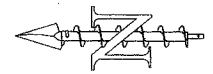
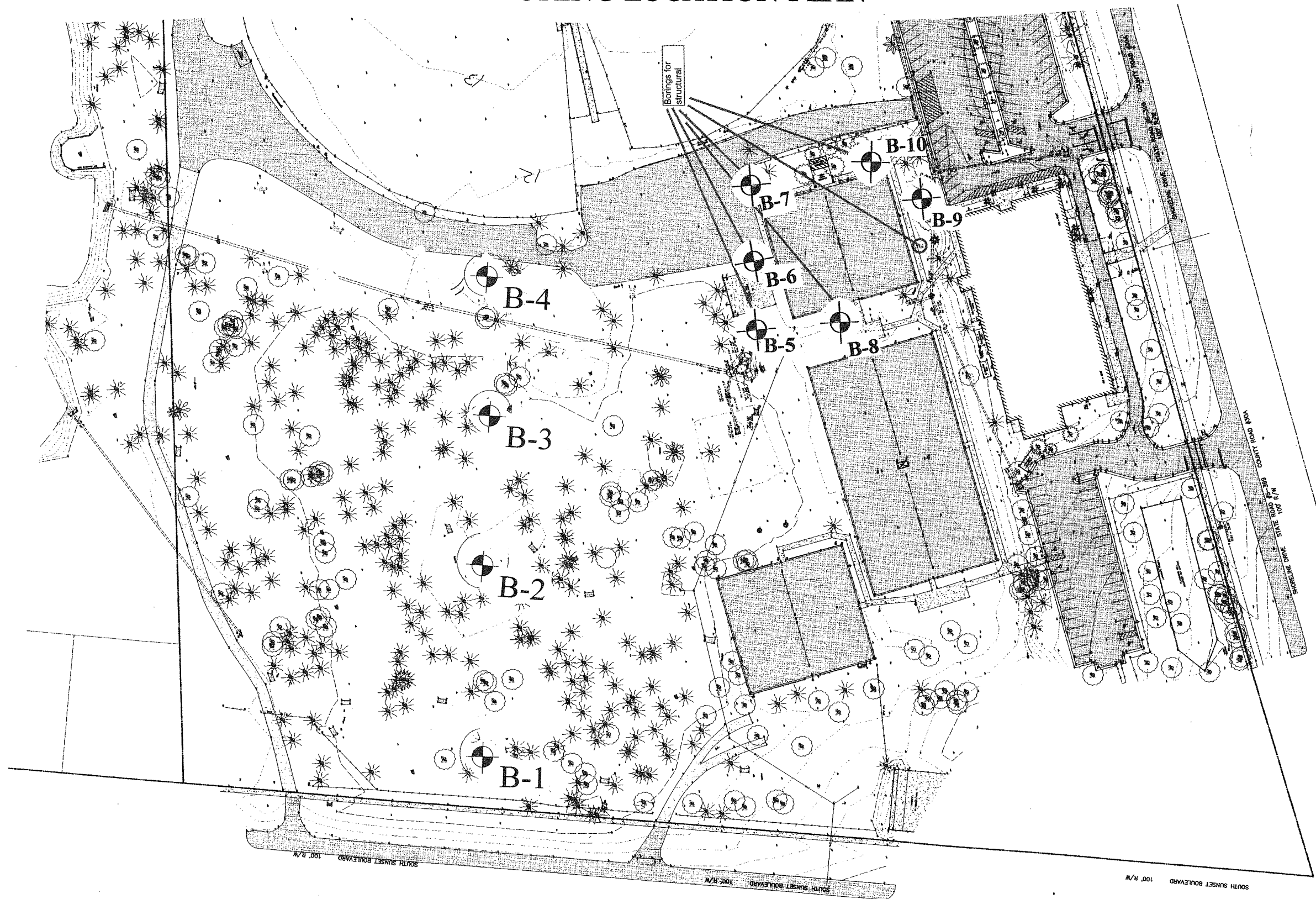

Keith V. Jacobs, PE
Project Engineer
Florida Reg. #66577

C: Mr. Paul Battle, PE
Rebol-Battle & Associates, LLC
2301 N 9th Avenue, Suite 300
Pensacola, Florida 32503
(Email: pbrba@bellsouth.net)

Mr. Nathan Berube, PE
Berube Leonard, LLC
3101 North 12th Ave.
Pensacola, FL 32503
(Email: nate@blse.net)

Attachments

BORING LOCATION PLAN



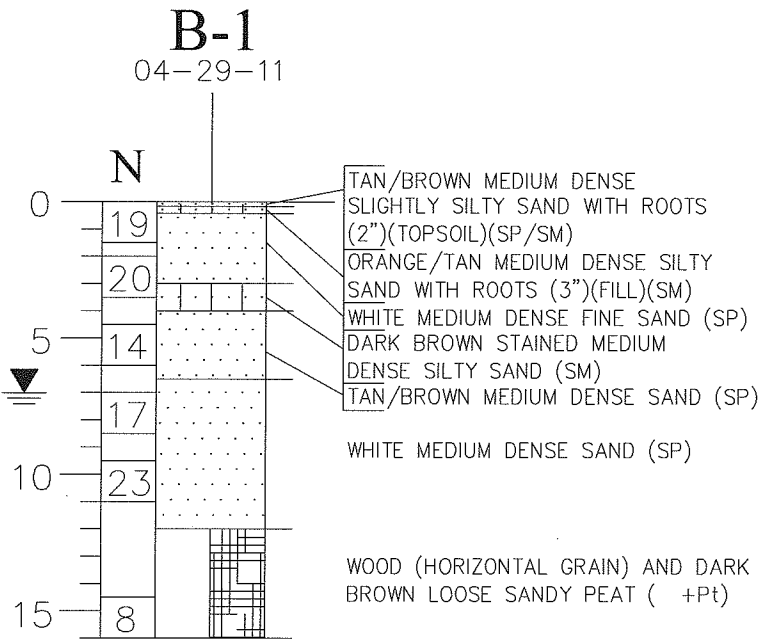
STANDARD PENETRATION TEST BORING

ALL BORING LOCATIONS ARE APPROXIMATE

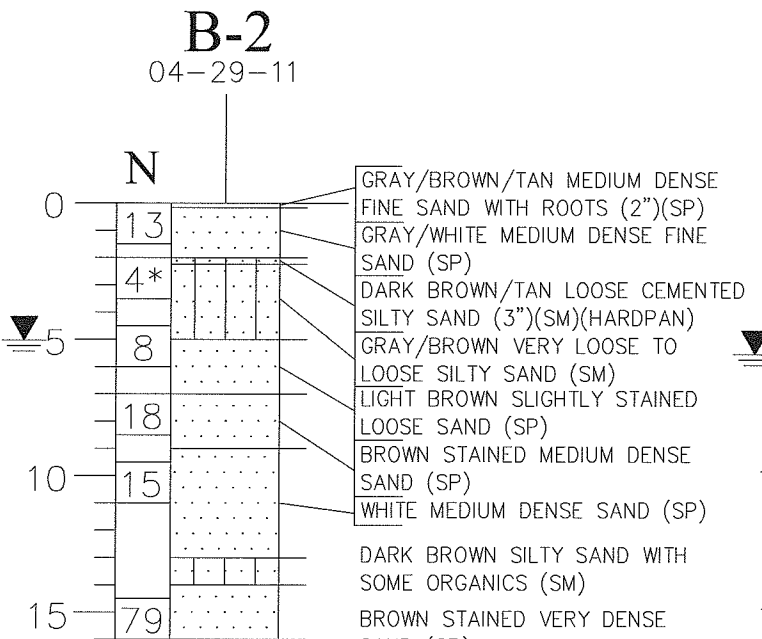
Project #: 11-143	Scale: 1" = 100'	Geotechnical Engineering Drilling Services Materials Testing
Date: 05/19/2011	Checked By: KVJ	
Project: Gulf Breeze Recreation Center Addition		
Location: Santa Rosa County, Florida		

BORING LOGS

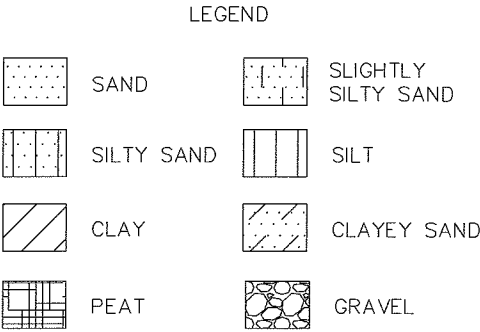
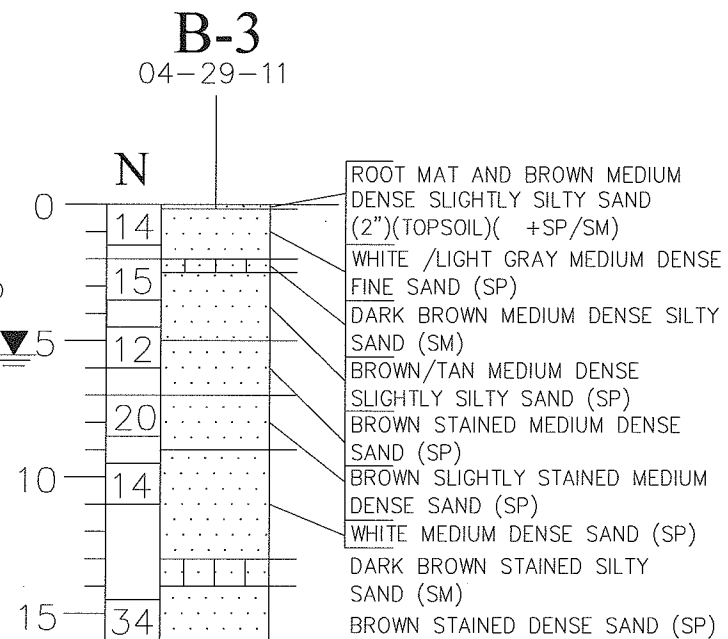
Figure #2



NOTE: SHELBY TUBE SAMPLE TAKEN FROM 1-3 FEET

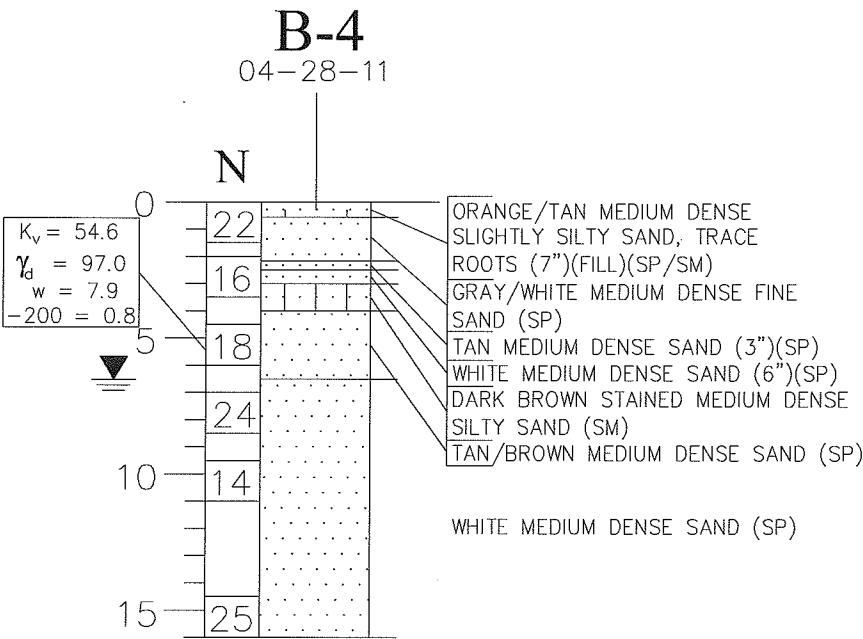


*HAMMER BLOWS:
2.5-FT SAMPLE: 3/2/2

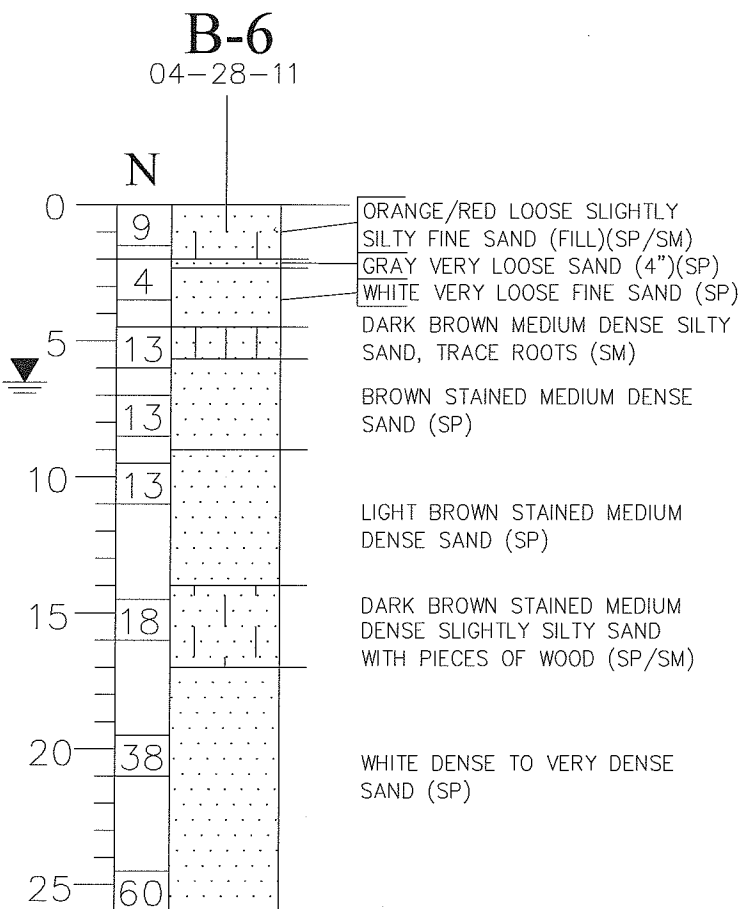
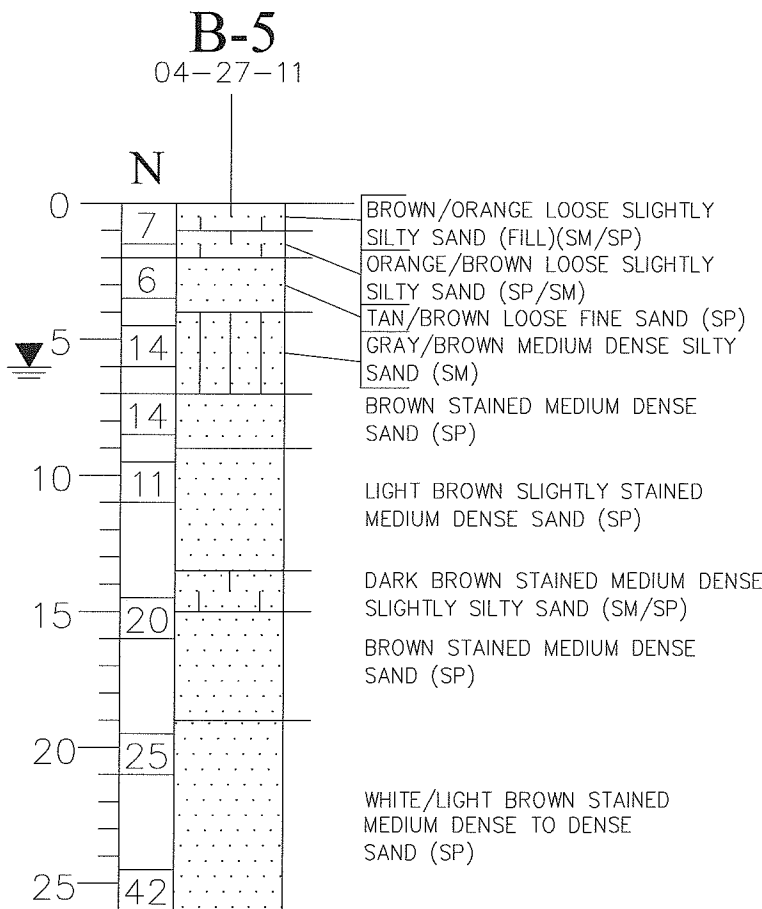


GRANULAR MATERIALS	
SPT BLOWS/FOOT (N)	RELATIVE DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
GREATER THAN 50	VERY DENSE

SILTS AND CLAY	
SPT BLOWS/FOOT (N)	RELATIVE DENSITY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-16	STIFF
17-32	VERY STIFF
GREATER THAN 32	HARD



NOTE: SHELBY TUBE SAMPLE TAKEN FROM 4-6 FEET



GNE GROUNDWATER NOT ENCOUNTERED AT TIME OF DRILLING
N STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT
ENCOUNTERED GROUNDWATER LEVEL
ENCOUNTERED PERCHED WATER LEVEL
50/2" NUMBER OF BLOWS REQUIRED (50) TO ADVANCE SPLIT SPOON SAMPLER A SPECIFIC DISTANCE (2) INCHES
HW SPLIT SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD AND HAMMER
W = NATURAL MOISTURE CONTENT (%)
-200 = FINES PASSING #200 SIEVE (%)
LL = ATTERBERG LIMITS (%)
LL=LIQUID LIMIT, PL=PLASTIC LIMIT
LI = LIQUIDITY INDEX
c = APPROXIMATE COHESION VALUE (PSF) BASED ON POCKET PENETROMETER READINGS
K_v = SATURATED VERTICAL HYDRAULIC CONDUCTIVITY (FT/DAY)
γ_d = DRY UNIT WEIGHT (pcf)
HA = HAND AUGERED DUE TO UTILITY CONCERNS

- NOTES:
- 1) SPT BORINGS PERFORMED IN GENERAL ACCORDANCE WITH ASTM D-1586
 - 2) SUBSURFACE CONDITIONS ARE AT BORING LOCATIONS AND ACTUAL CONDITIONS BETWEEN BORINGS MAY VARY
 - 3) ALL CLASSIFICATIONS ARE BASED ON VISUAL EXAMINATION UNLESS ACCOMPANIED BY LABORATORY TEST RESULTS
 - 4) BOUNDARIES BETWEEN SOIL LAYERS SHOULD BE CONSIDERED APPROXIMATE AS THE ACTUAL TRANSITION MAY BE GRADUAL
 - 5) DEPTH OF BORING IS BELOW EXISTING GRADE AT TIME OF DRILLING

Project #: 11-143 Scale: NTS

Date: 05/19/2011 Checked By: KVJ

Project: Gulf Breeze Recreation Center Addition

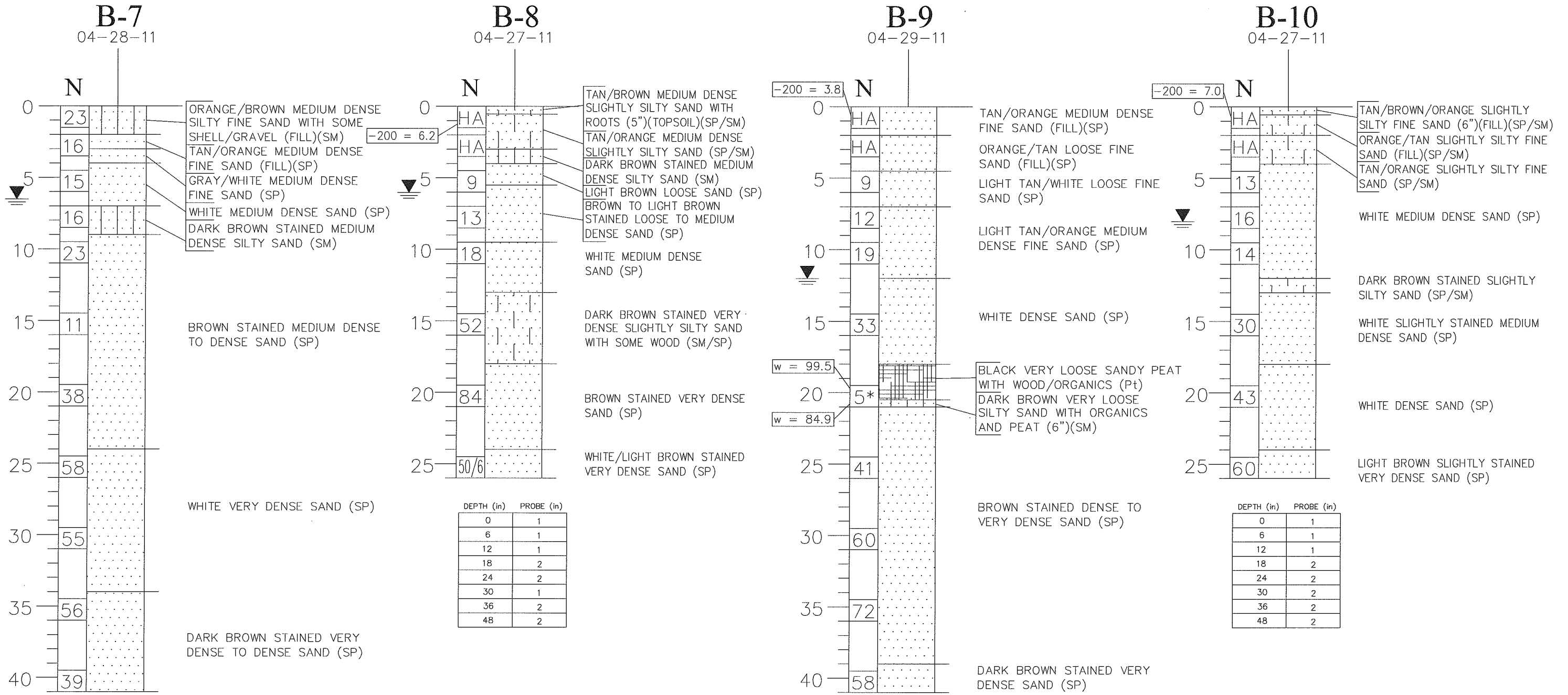
Location: Santa Rosa County, Florida

Geotechnical Engineering

Drilling Services Materials Testing

BORING LOGS

Figure #2



Project #: 11-143 Scale: NTS

Date: 05/19/2011 Checked By: KVJ

Project: Gulf Breeze Recreation Center Addition

Location: Santa Rosa County, Florida

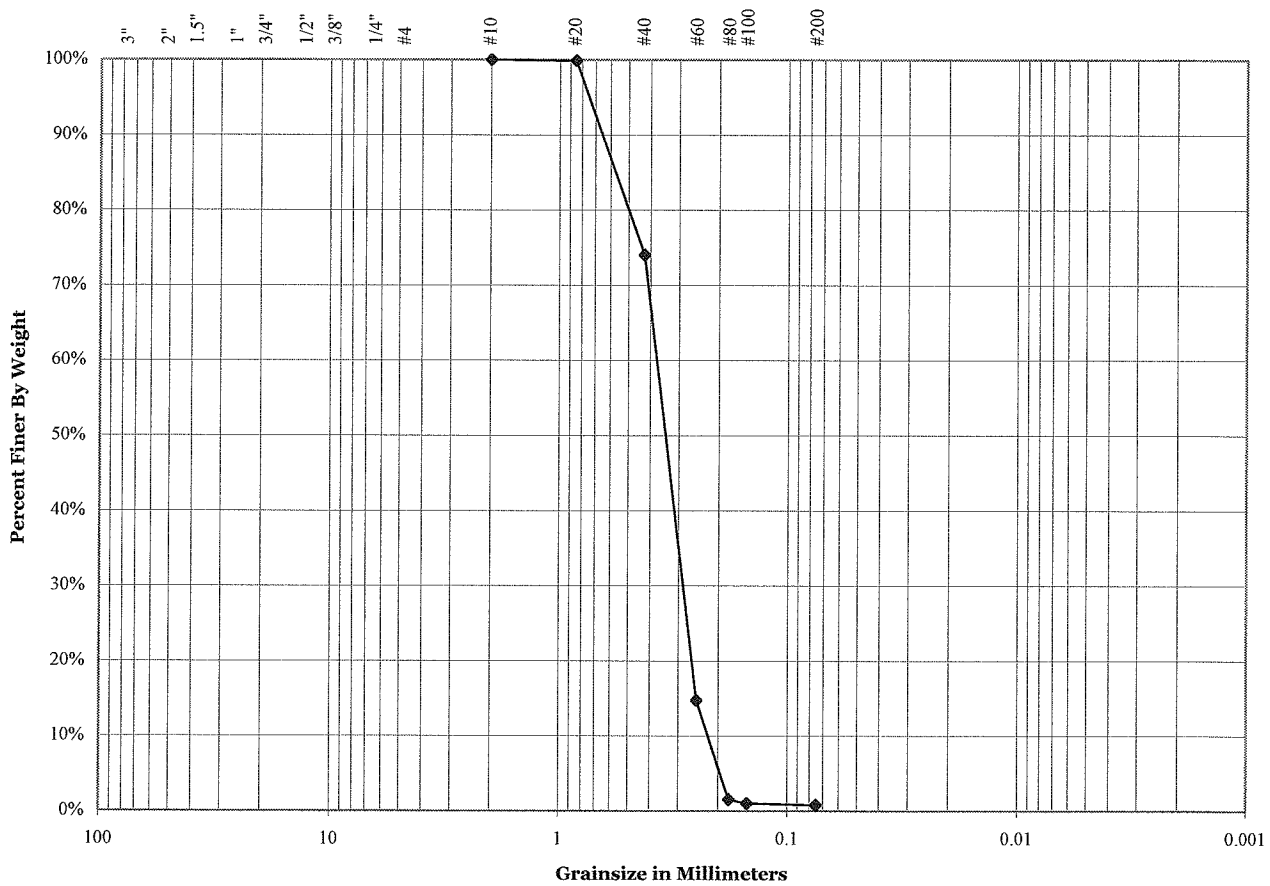
Geotechnical Engineering


Drilling Services
Materials Testing

Client: Bay Design Associates Architects
 Project: Gulf Breeze Recreation Center Addition
 Location: Santa Rosa County, Florida
 Grainsize Analysis - ASTM C136/AASHTO T27

Figure #: 3
 Project #: 11-143
 Date: 05/19/11
 Engineer: KVJ

Sample #	Depth (ft)	Soil Description
◆ B-4	5.0-6.0	Tan/Brown and White Fine Sand



GRAVEL		SAND			SILT OR CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	

SECTION 02050

MINOR DEMOLITION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Demolition of existing concrete curbing, sidewalks, asphalt, lawn sprinkler system, & site utilities as shown on Civil Drawings. Minor building demolition as shown on Architectural Drawings.
- B. Field verify all existing conditions in area of work, locate all site sewer systems, and lawn sprinkler systems.

1.2 REGULATORY REQUIREMENTS

- A. Conform to 2006 Florida Building Code and OSHA regulations.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 PREPARATION

- A. Provide, erect, and maintain temporary barriers and security devices.
- B. Notify and coordinate work with Owner, adjacent buildings, and potential affected parties which may affect their property, potential noise, utility outage, or disruption.
- C. Protect existing items which are not indicated to be removed.
- D. Coordinate with Owner prior to demolition as to what items shall be salvaged, and store salvaged items on-site where designated by the Owner.

3.2 DEMOLITION REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent building, roadways and operations of existing school facilities.
- B. Conduct operations with minimum interference to public or private accesses.
- C. Maintain protected egress and access at all times. Do not close or obstruct roadways without permission of Principal and local jurisdictions.

3.3 SELECTIVE DEMOLITION

- A. Demolish and remove components in an orderly and careful manner, in sequence as indicated on Architectural and Civil Drawings.
- B. Remove designated asphalt areas and prepare surfaces for new asphalt surfaces.

3.4 CLEAN UP

- A. Remove demolished materials from site as work progresses.
- B. Leave areas of work in clean condition.
- C. All salvaged items are to be the property of the Owner; store as indicated by Principal.

END OF SECTION 02050

SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
1. Preparing and grading subgrades for slabs-on-grade, walks, pavements, and landscaping.
 2. Excavating and backfilling for buildings and structures.
 3. Base course for walks and pavements.
 4. Subsurface drainage backfill for walls and trenches.
 5. Excavating and backfilling trenches within building lines.
 6. Excavating and backfilling for underground mechanical and electrical utilities and appurtenances.
- B. Related Sections: The following Sections contain requirements that relate to this Section.
1. Division 2 Section "Sod" for finish grading, including placing and preparing topsoil for lawns and planting.

1.3 DEFINITIONS

- A. Excavation consists of the removal of material encountered to subgrade elevations and the reuse or disposal of materials removed.
- B. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below base, drainage fill, or topsoil materials.
- C. Borrow: Soil material obtained off-site when sufficient approved soil material is not available from excavations.
- D. Base Course: The layer placed between the subbase and surface pavement in a paving system.
- E. Unauthorized excavation consists of removing materials beyond indicated subgrade elevations or dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be at the Contractor's expense.

- F. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below ground surface.
- G. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within building lines.

1.4 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Test Reports: In addition to test reports required under field quality control, submit the following:
 - 1. Laboratory analysis of each soil material proposed for fill and backfill from on-site and borrow sources.
 - 2. One optimum moisture-maximum density curve for each soil material.
 - 3. Report of actual unconfined compressive strength and/or results of bearing tests of each stratum tested.

1.5 QUALITY ASSURANCE

- A. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.
- B. Testing and Inspection Service: Employ a qualified independent geotechnical engineering testing agency to classify proposed on-site and borrow soils to verify that soils comply with specified requirements and to perform required field and laboratory testing.

1.6 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt existing utilities except when permitted in writing by Owner and then only after acceptable temporary utility services have been provided.
 - 1. Provide a minimum 48-hours notice to Owner and receive written notice to proceed before interrupting any utility.
- B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shutoff services if lines are active.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide approved borrow soil materials from off-site when sufficient approved soil materials are not available from excavations.

- B. Satisfactory Soil Materials: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter.
- C. Unsatisfactory Soil Materials: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT.
- D. Backfill and Fill Materials: Satisfactory soil materials.
- E. Base Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand, ASTM D 2940, with at least 95 percent passing a 1-1/2 inch sieve and not more than 8 percent passing a No. 200 sieve.
- F. Engineered Fill: Base materials.
- G. Bedding Material: Base materials with 100 percent passing a 1 inch sieve and not more than 8 percent passing a No. 200 sieve.
- H. Filtering Material: Evenly graded mixture of natural or crushed gravel or crushed stone and natural sand, with 100 percent passing a 1-1/2 inch sieve and 0 to 5 percent passing a No. 50 sieve.
- I. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- C. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.2 DEWATERING

- A. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

- B. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

3.3 EXCAVATION

- A. Explosives: Do not use explosives.
- B. Unclassified Excavation: Excavation is unclassified and includes excavation to required subgrade elevations regardless of the character of materials and obstructions encountered.

3.4 STABILITY OF EXCAVATIONS

- A. Comply with local codes, ordinances, and requirements of authorities having jurisdiction to maintain stable excavations.

3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1.2 inches. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

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

3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated slopes, lines, depths, and invert elevations.
 - 1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
 - 1. Clearance: As indicated
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove stones and sharp objects to avoid point loading.

1. For pipes or conduit less than 6 inches in nominal diameter and flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill.

3.8 APPROVAL OF SUBGRADE

- A. Notify Engineer when excavations have reached required subgrade.
- B. When Engineer determines that unforeseen unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
 1. Unforeseen additional excavation and replacement material will be paid according to the Contract provisions for changes in Work.
- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer.

3.9 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending indicated bottom elevation of concrete foundation or footing to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position when acceptable to Engineer.
 1. Fill unauthorized excavations under other construction as directed by Engineer.

3.10 STORAGE OF SOIL MATERIALS

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

3.11 BACKFILL

- A. Backfill excavations promptly, but not before completing the following:
 1. Acceptance of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
 2. Surveying locations of underground utilities for record documents.
 3. Testing, inspecting, and approval of underground utilities.
 4. Concrete formwork removal.
 5. Removal of trash and debris from excavation.

3.12 UTILITY TRENCH BACKFILL

- A. Place and compact bedding course. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- B. Concrete backfill trenches that carry below or pass under footings and that are excavated within 18 inches of footings. Place concrete to level of bottom of footings.
- C. Place and compact initial backfill of satisfactory soil material or subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit.
 - 1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
- D. Coordinate backfilling with utilities testing.
- E. Place and compact final backfill of satisfactory soil material to final subgrade.
- F. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.13 FILL

- A. Preparation: Remove vegetation, topsoil, debris, wet, and unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placing fills.
 - 1. Plow strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing surface.
- B. Place fill material in layers to required elevations for each location listed below.
 - 1. Under grass, use satisfactory excavated or borrow soil material.
 - 2. Under walks and pavements, use base material, or satisfactory excavated or borrow soil material.
 - 3. Under steps and ramps, use base material.
 - 4. Under footings and foundations, use engineered fill.

3.14 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill material on surfaces that are muddy.
 - 2. Remove and replace, or scarify and air-dry satisfactory soil material that is too wet to compact to specified density.
 - a. Stockpile or spread and dry removed wet satisfactory soil material.

3.15 COMPACTION

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure.
- C. Percentage of Maximum Dry Density Requirements: Compact soil to not less than the following percentages of maximum dry density according to ASTM D 1557:
 - 1. Under structures, building slabs, steps, and pavements, compact the top 12 inches below subgrade and each layer of backfill or fill material at 98 percent maximum dry density.
 - 2. Under walkways, compact the top 6 inches below subgrade and each layer of backfill or fill material at 95 percent maximum dry density.

3.16 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between existing adjacent grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - 1. Lawn or Unpaved Areas: Plus or minus 1.2 inches.
 - 2. Walks: Plus or minus 1/4 inch.
 - 3. Pavements: Plus or minus 1/4 inch.
- C. Grading Inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10 foot straightedge.

3.17 BASE COURSES

- A. Under pavements and walks, place base course material on prepared subgrades.
 - 1. Compact base courses at optimum moisture content to required grades, lines, cross sections and thickness to not less than 98 percent of ASTM D 1557 relative density.
 - 2. Shape base to required crown elevations and cross-slope grades.
 - 3. When thickness of compacted base course is 8 inches or less, place materials in a single layer.

3.18 FIELD QUALITY CONTROL

- A. Testing Agency Services: Allow testing agency to inspect and test each subgrade and each fill or backfill layer. Do not proceed until test results for previously completed work verify compliance with requirements.
1. Perform field in-place density tests according to ASTM D 1556 (sand cone method), ASTM D 2167 (rubber balloon method), or ASTM D 2937 (drive cylinder method), as applicable.
 - a. Field in-place density tests may also be performed by the nuclear method according to ASTM D 2922, provided that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D 1556. With each density calibration check, check the calibration curves furnished with the moisture gages according to ASTM D 3017.
 - b. When field in-place density tests are performed using nuclear methods, make calibration checks of both density and moisture gages at beginning of work, on each different type of material encountered, and at intervals as directed by Engineer
 2. Footing Subgrade: At footing subgrades, perform at least one test of each soil stratum to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of each subgrade with related tested strata when acceptable to Engineer.
 3. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, perform at least one field in-place density test for every 5,000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.
 4. Foundation Wall Backfill: In each compacted backfill layer, perform at least one field in-place density test for each 100 feet or less of wall length, but no fewer than two tests along a wall face.
 5. Trench Backfill: In each compacted initial and final backfill layer, perform at least one field in-place density test for each 400 feet or less of trench, but no fewer than two tests.
- B. When testing agency reports that subgrades, fills, or backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, recompact and retest until required density is obtained.

3.19 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.
1. Scarify or remove and replace material to depth directed by Jacobs/Titan; reshape and recompact at optimum moisture content to the required density.

- C. Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.20 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

END OF SECTION 02200

SECTION 02361 - TERMITE CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following for termite control:
 - 1. Soil treatment.

1.3 DEFINITIONS

- A. EPA: Environmental Protection Agency.
- B. PCO: Pest control operator.

1.4 SUBMITTALS

- A. Product Data: Treatments and application instructions, including EPA-Registered Label.
- B. Product Certificates: Signed by manufacturers of termite control products certifying that treatments furnished comply with requirements.
- C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's record information, including the following as applicable:
 - 1. Date and time of application.
 - 2. Moisture content of soil before application.
 - 3. Brand name and manufacturer of termiticide.
 - 4. Quantity of undiluted termiticide used.
 - 5. Dilutions, methods, volumes, and rates of application used.
 - 6. Areas of application.
 - 7. Water source for application.
- E. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: A PCO who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment in jurisdiction where Project is located and who is experienced and has completed termite control treatment similar to that indicated for this Project and whose work has a record of successful in-service performance.
- B. Applicator Qualifications: A PCO who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment in jurisdiction where Project is located and who is an experienced installer who employs workers trained and approved by bait station system manufacturer to install manufacturer's products.
- C. Regulatory Requirements: Formulate and apply termiticides, and label with a Federal registration number, to comply with EPA regulations and authorities having jurisdiction.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with EPA-Registered Label requirements and requirements of authorities having jurisdiction.

1.7 COORDINATION

- A. Coordinate soil treatment application with excavating, filling, and grading and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs, before construction.

1.8 WARRANTY

- A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Special Warranty: Written warranty, signed by applicator and Contractor certifying that termite control work, consisting of applied soil termiticide treatment, will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.
- C. Warranty Period: Five years from date of Substantial Completion.

1.9 MAINTENANCE SERVICE

- A. Continuing Service: Provide a proposal for continuing service, including monitoring, inspection, and retreatment for occurrences of termite activity, from applicator to

Owner, in the form of a standard yearly continuing service agreement, starting on the date of Substantial Completion. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS

2.1 SOIL TREATMENT

- A. Termiticide: Provide an EPA-registered termiticide complying with requirements of authorities having jurisdiction, in a soluble or emulsible, concentrated formulation that dilutes with water or foaming agent, and formulated to prevent termite infestation. Use only soil treatment solutions that are not harmful to plants. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to the product's EPA-Registered Label.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. AgrEvo Environmental Health, Inc.; a Company of Hoechst and Schering, Berlin.
 - 2. American Cyanamid Co.; Agricultural Products Group; Specialty Products Department.
 - 3. Bayer Corp.; Garden & Professional Care.
 - 4. DowElanco.
 - 5. FMC Corp.; Pest Control Specialties.
 - 6. Zeneca Professional Products.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for moisture content of the soil, interfaces with earthwork, slab and foundation work, landscaping, and other conditions affecting performance of termite control. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's written instructions for preparing substrate. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil and around foundations.

- B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended by termiticide manufacturer.
- C. Fit filling hose connected to water source at the site with a backflow preventer, complying with requirements of authorities having jurisdiction.

3.3 APPLICATION, GENERAL

- A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's EPA-Registered Label for products.

3.4 APPLYING SOIL TREATMENT

- A. Application: Mix soil treatment termiticide solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute the treatment evenly.
 - 1. Slabs-on-Grade and Basement Slabs: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.
 - 2. Foundations: Adjacent soil including soil along entire inside perimeter of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric conduit penetrating slab, and around interior column footers, piers, and chimney bases; and along entire outside perimeter, from grade to bottom of footing. Avoid soil washout around footings.
 - 3. Penetrations: At expansion joints, control joints, and areas where slabs will be penetrated.
- B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.
- C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.
- D. Post warning signs in areas of application.
- E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

END OF SECTION 02361

SECTION 02485

SOD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION

- A. Work included: Provide sod as indicated on the Drawings, specified herein, and needed for a complete and proper installation.

1.3 QUALITY ASSURANCE

- A. 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 of this Section.
- B. Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The publications shall be the most current issue.

AMERICAN SOD PRODUCERS ASSOCIATION, INC. (ASPA)

ASPA-01 Guideline Specifications to Sodding

U.S. DEPARTMENT OF AGRICULTURE (USDA)

USDA-01 Federal Seed Act of August 9, 1939 (53 Stat. 1275) Rules and Regulations

1.4 SUBMITTALS

- A. The following shall be submitted in accordance with Section 01300, SUBMITTALS:
1. Certificates of Compliance: Prior to the delivery of materials, certificates of compliance shall be submitted certifying that materials meet the requirements specified. Certified copies of the reports for the following materials shall be submitted:
 - a. Seeds: For mixture percentage, pure live seed, weed seed content, germination, date tested.
 - b. Sod: For species, mixture percentage, percent purity.
 - c. Fertilizer: For chemical analysis composition percent.
 - d. Lime: For chemical and sieve analysis.
 - e. Pesticide Material: For EPA registration and uses.
 - f. Topsoil: pH, phosphorus, and potash.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery:
1. Inspection: Turf material shall be inspected upon arrival at the jobsite, and unacceptable material shall be removed from the jobsite.
 2. Protection: Sod shall be protected from drying out and from contamination during delivery.
 3. Fertilizer and Lime: Delivery of fertilizer and lime to the site shall be in original, unopened containers bearing manufacturer's chemical analysis. Instead of containers, fertilizer and lime may be furnished in bulk. A chemical analysis shall be provided for bulk deliveries.
 4. Pesticide: Pesticide shall be delivered to the site in the original unopened containers with legible labels indicating the Environmental Protection Agency (EPA) registration number and the manufacturer's registered uses.
- B. Storage: Materials shall be stored in areas approved by the Total Program Manager (T.P.M.). Sod shall be lightly sprinkled with water, covered with moist burlap, straw, or other covering; and protected from exposure to wind and direct sunlight until planted. Covering for sod shall allow air to circulate and prevent internal heat from building up. Seed, lime, and fertilizer shall be stored in cool, dry locations away from contaminants. Pesticides shall not be stored with other landscape materials.
- C. Handling:
1. Materials: Except for bulk deliveries, materials shall not be dropped or dumped from vehicles.
 2. Time Limitation for Sod: Limitation of the time between harvesting and placing of sod shall be as specified in paragraph "SODDING."

PART 2 - PRODUCTS

2.1 SEED

- A. Seed Classification: State-certified seed of the latest season's crop shall be provided in original sealed packages bearing the producer's guaranteed analysis for mixture percentage, purity, germination, weed seed content, and inert material. Labels shall be in conformance with USDA-01 and applicable state seed laws.
- B. Seed Mixtures: Seed mixtures shall be proportioned by weight as follows:
1. For the temporary winter cover:
 - a. Botanical Name: Secale Cereale
 - b. Common Name: Albruzzi Rye
 - c. Application Rate: 3 lb/1000 SF
 - d. Minimum Percent Pure Live Seed: 98%
 - e. Minimum Percent Germination: 80%
 2. For permanent cover:
 - a. Botanical Name: Paspalum Notatum var. Pensacola
 - b. Common Name: Pensacola Bahia
 - c. Application Rate: 1 lb/1000 SF
 - d. Minimum Percent Pure Live Seed: 90%
 - e. Minimum Percent Germination: 85%

- C. Weed Seed: Weed seed shall not exceed 1 percent by weight of the total. Wet, moldy, or otherwise damaged seed will be rejected.

2.2 SOD

- A. Sod Classification: State-certified Nursery-grown sod shall be provided as classified in the ASPA-01. Sod shall be machine cut to a uniform thickness of 1-1/4 inches within a tolerance of 1/4 inch, excluding top growth and thatch. The sod shall be free of diseases, nematodes, and soil-borne insects, undesirable plants, stones larger than 2-inches in any dimension, woody plant roots and other material detrimental to the development of the turf.
- B. Broken Sections: Irregularly shaped pieces of sod and torn or uneven ends will be rejected.

2.3 TOPSOIL

- A. Topsoil shall be the existing surface soil which has been stripped and stockpiled on the site. Additional topsoil, if required beyond that available from stripping operations, shall be a natural, friable soil representative of productive soils in the vicinity. It shall be obtained from well-drained borrow areas provided by the Contractor and shall be free of any admixture of subsoil, foreign matter, objects larger than one inch in any dimension, toxic substances, and any material or substance that may be harmful to plant growth. The pH range shall be 5.3 to 6.0. Topsoil that does not meet the lower pH limit shall be amended by the addition of lime, at a rate recommended based on soil tests.

2.4 SOIL AMENDMENTS

- A. Soil amendments shall consist of lime and fertilizer meeting the following requirements.
 - 1. Lime: The Contractor shall use either agricultural limestone or marl.
 - a. Agricultural limestone shall have a minimum calcium carbonate equivalent of 90 percent and shall be ground to such a fineness that at least 90 percent will pass a 10-mesh sieve and at least 50 percent will pass a 60 mesh sieve.
 - b. Marl shall have a minimum calcium carbonate equivalent of 80 percent and shall be crushed to such a fineness that at least 90 percent will pass an 8-mesh sieve and at least 80 percent will pass a 10-mesh sieve.
 - 2. Fertilizer: Fertilizer shall be commercial grade, free flowing, uniform in composition and shall bear the manufacturer's guaranteed statement of analysis.
 - a. Granular Fertilizer: Shall consist of a nitrogen-phosphorus-potassium fertilizer analysis having all of the nitrogen in the nitrate or ammoniacal form and shall be selected from one of the following grades: 8-8-8.
 - b. Slow-release Fertilizer: Shall consist of slow release nitrogen forms derived from sulfur coated urea (SCU), ureaformaldehyde (UF), plastic or polymer coated prills, or isobutylenediurea (IBDU). Slow-release fertilizer shall consist of a nitrogen-phosphorus-potassium fertilizer analysis having 50% or more of the nitrogen in the slow release form and shall be selected from one of the following grades: 15, 0, 15.

2.5 WATER

- A. Water shall not contain elements toxic to plant life and shall be of a quality suitable for irrigation.

2.6 PESTICIDE

- A. Pesticide shall be EPA registered and approved for intended use.

PART 3 - EXECUTION

3.1 SEEDING AND SODDING TIMES

- A. Sodding Time: Sodding operations shall take place between Mar 15 and Dec 1, inclusive.
1. Temporary Winter Cover Planting Time: When the completion schedule of the work under the contract requires a delay in sodding operations due to the limitation dates above, the areas not yet seeded or which do not have a vegetative cover shall be seeded immediately with a temporary winter cover.

3.2 SITE PREPARATION

- A. Preparation of Seeding and Sodding Areas:
1. Grading: The placing of topsoil and smooth grading shall be completed as specified herein and in accordance with Section 02200 EARTHWORK. The finished grades indicated on the drawings shall be approved prior to seeding and sodding.
 2. Unsatisfactory Environmental Conditions: Site preparation work shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture or other unsatisfactory condition prevails, the work shall be stopped when directed.
- B. Application of Soil Amendments:
1. Soil Test: A soil test shall be performed for pH, chemical analysis and mechanical analysis to establish the quantities and type of soil amendments required to meet local growing conditions for the type and variety of turf specified.
 2. Lime: Lime shall be applied at the rate as recommended by the soil test. Lime shall be incorporated into the soil to a minimum depth of 4-inches or may be incorporated as part of the tillage operation.
 3. Fertilizer: Fertilizer shall be applied at the rate as recommended by the soil test. Fertilizer shall be incorporated into the soil to a minimum depth of 4-inches or may be incorporated as part of the tillage or hydroseeding operation.
 4. Deviations: Deviations in the ground surface in relation to the grades indicated shall be corrected prior to grassing.
- C. Topsoil: Topsoil shall be distributed uniformly and spread evenly to an average thickness of 3-inches, with a minimum thickness of 2-inches. Topsoil shall be spread so that planting can proceed with little additional soil preparation or additional tillage. Surface irregularities resulting from topsoiling or other operations shall be leveled to prevent depressions. Grade shall be adjusted to assure that planted grade will be 1-inch below adjoining grade of any surfaced area. New surfaces shall be blended into existing areas. Soil compacted by construction equipment or soil on compacted cut slopes of grades shall be pulverized to a minimum depth of 2-inches by disking or plowing before applying topsoil.

D. Tillage:

1. Minimum Depth: Soil shall be tilled to a minimum depth of 4-inches by plowing, disking, harrowing, rototilling or other method. On slopes 2 horizontal to 1 vertical and steeper, the soil shall be tilled to a minimum depth of 2-inches by scarifying with heavy rakes, or other method. Rototillers shall be used where soil conditions and length of slope permit. On slopes 1 horizontal to 1 vertical and steeper, no tillage is required.
2. Applying Lime and Fertilizer: Lime and fertilizer, as specified, may be applied during tillage.

E. Finished Grading:

1. Preparation: Turf areas shall be filled as needed or have surplus soil removed to attain the finished grade. Drainage patterns shall be maintained as indicated on drawings. Turf areas compacted by construction operations shall be completely pulverized by tillage. Soil used for repair of erosion or grade deficiencies shall conform to topsoil requirements specified in this section. Finished grade shall be 1-inch below the adjoining grade of any surfaced area. New surfaces shall be blended to existing areas.
2. Debris, 1-Inch: Lawn areas shall have debris and stones larger than 1-inch in any dimension removed from the surface.
3. Protection: Finished graded areas shall be protected from damage by vehicular or pedestrian traffic and erosion.

F. Application of Pesticides: When treatment becomes necessary to remove a pest, a state certified pesticide applicator shall apply required chemicals in accordance with EPA label restrictions and recommendations. Hydraulic equipment shall be provided for the liquid application of chemicals with a leak-proof tank, positive agitation methods, controlled application pressure and metering gauges.

G. Seeding Rates:

1. Temporary Winter Cover Seed :

	<u>Percent seed in mixture</u>	<u>Pounds per acre</u>	<u>Pounds per 1000 sq. ft.</u>
TOTAL	100	130	3

2. Permanent Cover Seed:

	<u>Percent seed in mixture</u>	<u>Pounds per acre</u>	<u>Pounds per 1000 sq. ft.</u>
TOTALS	100%	44	1

3.3 SODDING

A. General: Areas shall be sodded as indicated. Sod shall be placed in accordance with the ASPA-01 in the areas indicated. The time limitation between harvesting and placing sod is 36 hours. Sod that has become dry, moldy or yellow from heating will be rejected.

B. Placing Sod: Adequate soil moisture shall be ensured prior to sodding by spraying water on the area to be sodded and wetting the soil to a minimum depth of 4-inches. On long slopes sod shall be laid at right angles to slopes. In ditches sod shall be laid at right angles to the flow of water. When

required, the sod shall be anchored by placing anchors a minimum distance of 2 feet on center with a minimum of 2 anchors per sod section. Sod shall be laid smoothly edge to edge with staggered joints. No gaps larger than 1-inch shall exist between sod joints.

- C. Finishing: Air pockets shall be eliminated and a true and even surface shall be provided by tamping or rolling the sod in place. Frayed edges shall be trimmed and holes or missing corners shall be patched with sod.
- D. Temporary Winter Cover: When the completion schedule of the work under the contract requires a delay in grassing operations due to the limitation dates in paragraph 3.1 above, the areas which do not have a vegetative cover shall be seeded immediately with a temporary winter cover to prevent erosion. All areas shall be seeded with annual ryegrass. The temporary winter cover planting shall include the application of 1/2 the quantity of required soil amendments in the paragraph "SITE PREPARATION", with the remaining 1/2 to be included with the permanent grassing operations. The areas to be seeded with a temporary winter cover shall be tilled prior to seeding with the mixture in the same manner as specified in paragraph "SITE PREPARATION". Areas provided with the temporary cover shall be tilled prior to resuming permanent grassing operations.

3.4 RESTORATION AND CLEAN UP

- A. Excess and waste material shall be removed and disposed of off the site. Adjacent paved areas shall be cleaned. Existing turf areas which have been damaged during the contract operations shall be restored to original conditions.

3.5 PROTECTION OF TURFED AREAS

- A. Immediately after turfing, the area shall be protected against traffic or other use by erecting barricades and providing signage as required or as directed by the T.P.M.

3.6 TURF ESTABLISHMENT PERIOD:

- A. Length of Period: The turf establishment period will begin on the first day of grassing work under this contract and will continue through the remaining life of the contract and end three (3) months after the last day of grass planting required by this contract.
- B. Stand of Turf: A stand of turf from the sodding operation is defined as living sod uniform in color and leaf texture. Bare spots shall be no larger than 6-inches square. The total bare spots shall not exceed 2 percent of the total sodded area.
- C. Maintenance During Establishment Period:
 - 1. General: Maintenance of the turfed areas shall include mowing, removal of excess clippings, eradicating weeds, eradicating insects and diseases, watering, fertilizing, overseeding and any other operation necessary to promote the growth of sodded grass. Maintenance shall also include protecting embankments and ditches from erosion, maintaining erosion control material, and protecting turfed areas from traffic.
 - 2. Repair: When any portion of the surface becomes gullied or otherwise damaged or treatment is destroyed, the affected portion shall be repaired to reestablish condition and grade of soil and treatment prior to injury, as directed. Repair work required because of faulty operations or negligence on the part of the Contractor shall be performed without

- cost to the Owner. Mulch shall be repaired or replaced as required.
3. Mowing: The Contractor shall mow seeded and sodded areas to a minimum height of 1 1/2 inches when the average height of the turf becomes 3 inches. Following the initial mowing operation, the Contractor shall mow newly grassed areas at 1 week intervals; reducing the height of the grass by not more than 1/3 the height prior to each mowing operation.
 4. Watering: Watering operations during the turf establishment period shall consist of watering operations as necessary to maintain an adequate supply of moisture within the root zone. Frequency of watering and quantity of water shall be adjusted in accordance with the growth of the turf.
 5. Post-Fertilization: Fertilizer shall be applied during the 3rd month. Fertilizer having an analysis of 15.0.15 shall be applied at the rate of 150 pounds per acre at each application.
 6. Pesticide Treatment: When a pest or disease becomes apparent during the Turf Establishment Period, a state certified pesticide applicator shall apply required pesticide in accordance with EPA label restrictions and recommendations.

3.7 FINAL ACCEPTANCE

- A. At the end of the Turf Establishment Period, a final inspection will be made. Final acceptance of the turf will be based upon a satisfactory stand of turf as defined in the paragraph "TURF ESTABLISHMENT PERIOD." Rejected areas shall be replanted or repaired as directed by the T.P.M.

3.8 QUALITY CONTROL

- A. The Contractor shall establish and maintain quality control for operations under this section to assure compliance with contract requirements and maintain records of his quality control for materials, equipment, and construction operations.

END OF SECTION 02485

SECTION 02500
STORM DRAINAGE

PART 1 – GENERAL

1.1 WORK INCLUDES

This section includes the following complete systems with all appurtenances for the installation of storm sewers. The storm sewers under this Section shall include all catch basins, curb inlets, junction boxes, headwalls, and related items.

1.2 CERTIFICATES

Furnish to the Engineer, affidavits from the manufacturer of pipe, pipe coating, fittings, valves and other equipment furnished and installed under this Section, certifying that such material delivered to the project conforms to the requirements of this specification.

PART 2 – PRODUCTS

2.1 STORM SEWER PIPE

Pipe may be one of the following materials unless otherwise specified.

- A. Reinforced Concrete Pipe as specified on the plans and conforming to applicable local standards.
- B. Contech A2000 PVC pipe or approved equal.

2.2 FITTINGS

Provide proper fittings for the installation and connection of all lines. Connections made by cutting holes in pipes will not be permitted.

- 2.3** Concrete for sewer structures shall be 3,000 psi and meet the applicable requirements given in SECTION 03300 - CAST IN PLACE CONCRETE.

- 2.4** Castings for concrete sewer structures shall comply with local standards. Castings for sewer structures shall be of tough, even grained, soft gray iron, free from burnt-on sand and other injurious defects, and of the approximate weight and dimensions shown on the drawings. Before leaving the foundry, castings shall be thoroughly cleaned, subject to hammer test for soundness and given two coats of coal tar pitch varnish.

- 2.5** Rip-rap shall be Quarry-Run with maximum 150 pound stone, with 35% maximum passing through a #1 sieve. Masonry rubble may be used as a concealed under-base for stone or wherever covered by earth. Masonry rubble shall not be exposed under any circumstances. Rip-rap shall be placed where shown on drawings.

- 2.6** Headwalls for storm sewer pipe shall be precast concrete or poured-in-place concrete as detailed on plans.

PART 3 – EXECUTION

3.1 TRENCHING AND BACKFILLING

- A. All excavations shall be implemented in accordance with recommendations of the geotechnical engineer. Subcontractor must read all recommendations of the geotechnical engineer before beginning the work in this section and must comply in all respects with the recommendations of the geotechnical engineer.
- B. General: Provide separate trench for each utility. Lay all piping in open trench. Include all storm sewer work complete as shown on the plans including all excavation, backfilling, pipe, structures with tops and aprons, flared end sections, rip rap, etc. Pipe material shall be as called for on plans.
- C. Width of the Trench: Excavate trenches of sufficient width for proper installation of the work. When the depth of backfill over sewer pipe exceeds 10 feet, keep the trench below the level of the top of the pipe as narrow as practicable.
- D. Sheet piling, Bracing, Water Removal: Sheet and brace trenches and remove water, as necessary to fully protect workmen. Comply with local regulations or, in the absence thereof, with the provisions of the "Manual of Accident Prevention in Construction," of the Association of General Contractors of America, Inc. and latest edition of OSHA requirements. Under no circumstances lay pipe or install appurtenances in water, keep the trench free from water until pipe point material has hardened. The presence of water in the soil or the necessity of sheet piling or bracing trenches shall not constitute a condition for which any increase may be made in the Contract Price, except that when sheet piling is left in place, on the written order of the Architect, the Contract price shall be adjusted. Sheet piling left in place shall be cut off not less than 2 feet below finished grade. Sheet piling shall not be removed until the trench is substantially backfilled. Dewatering of trenches should be coordinated with the geotechnical report provided in Appendix B.
- E. Blasting: Obtain written consent and approval of method from the Owner and local permitting agencies before proceeding with blasting. Cover blasts with heavy timbers or blasting mats to prevent "flyrock". Set off no blast within 25 feet of pipe already laid in the trench. Protect by earth backfill pipe already laid. All blasting shall be coordinated with the geotechnical report provided in Appendix B.
- F. Grading Trench Bottom: Grade the bottom of trenches evenly to insure uniform bearing for the full length of all pipes. Cut holes as necessary for joints and joint making. Excavate all rock, cemented gravel, old masonry or other hard materials to at least 6 inches below the pipe at all points. Refill such space and all other cuts below grade with sand or fine gravel firmly compacted.
- G. Backfilling: Backfill trenches only after piping has been inspected, tested and locations of pipe and appurtenances have been recorded. Backfill by hand around pipe and for a depth of one foot above pipe, use earth without rock fragments or large stones and tamp firmly in layers not exceeding 6 inches in thickness, taking care not to disturb the pipe or injure the pipe coating. Compact the remainder of the backfill thoroughly with an approved mechanical tamper to density specified.
- H. Grading and Stockpiling Trenched Material:
 - 1. Control the stockpiling of trenched material in a manner to prevent water running into the excavations.

2. Do not obstruct the surface drainage but provide means by whereby storm and waste waters are diverted into existing gutter, other temporary drains, or surface drains.

END OF SECTION 02500

SECTION 02510

WATER DISTRIBUTION

PART 1 – GENERAL

1.1 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. The publications shall be the most current issue.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 307 Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength

ASTM A 536 Ductile Iron Castings

ASTM C 94 Ready-Mixed Concrete

ASTM D 1785 Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120

ASTM D 2241 Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)

ASTM D 2466 Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40

ASTM D 2564 Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems

ASTM D 2774 Underground Installation of Thermoplastic Pressure Piping

ASTM D 2855 Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings

ASTM D 3139 Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals

ASTM F 402 Safe Handling of Solvent Cements, Primers, and Cleaners Used for Joining Thermoplastic Pipe and Fittings

ASTM F 477 Elastomeric Seals (Gaskets) for Joining Plastic Pipe

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C104/A21.4 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water

AWWA C110/A21.10 Ductile-Iron and Gray-Iron Fittings, 3 in. Through 48 in. (75 mm Through 1200 mm), for Water and Other Liquids

AWWA C111/A21.11 Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings

ANSI/AWWA C151/A21.51 Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids

AWWA C153/A21.53 Ductile-Iron Compact Fittings, 3 in. Through 24 in. (76 mm Through 610 mm) and 54 in. Through 64 in. (1,000 mm Through 1,600 mm), for Water Service

AWWA C500 Metal-Seated Gate Valves for Water Supply Service

AWWA C502 Dry-Barrel Fire Hydrants

AWWA C508 Swing-Check Valves for Waterworks Service, 2 in. (50 mm) Through 24 in. (600 mm) NPS

AWWA C509 Resilient-Seated Gate Valves for Water and Sewerage Systems

AWWA C600 Installation of Ductile-Iron Water Mains and Their Appurtenances

AWWA C651 Disinfecting Water Mains

AWWA C800 Underground Service Line Valves and Fittings

AWWA C900 Polyvinyl Chloride (PVC) Pressure Pipe, 4 in. Through 12 in., for Water Distribution

AWWA C906 Polyethylene (PE) Pressure Pipe and Fittings, 4 in. Through 63 in., for Water Distribution

AWWA M23 PVC Pipe - Design and Installation

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS
INDUSTRY, INC. (MSS)

MSS SP-80 Bronze Gate, Globe, Angle and Check Valves

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 24 Installation of Private Fire Service Mains and Their Appurtenances

UNI-BELL PVC PIPE ASSOCIATION (UBPPA)

UBPPA UNI-B-3 Installation of Polyvinyl Chloride (PVC) Pressure Pipe

UBPPA UNI-B-8 Direct Tapping of Polyvinyl Chloride (PVC) Pressure Water Pipe

UNDERWRITERS LABORATORIES INC. (UL)

UL 246 Hydrants for Fire-Protection Service

UL 262 Gate Valves for Fire-Protection Service

UL 312 Check Valves for Fire-Protection Service

UL 789 Indicator Posts for Fire-Protection Service

1.2 DESIGN REQUIREMENTS

- A. Water Distribution Mains: Provide water distribution mains indicated as 4 through 12 inch diameter pipe sizes of ductile-iron or polyvinyl chloride (PVC) plastic pipe. Also provide water main accessories, gate valves and check valves as specified and where indicated.
- B. Water Service Lines: Provide water service lines indicated as less than 4 inch lines from water distribution main to building service at the point indicated. Water service lines shall be polyvinyl chloride (PVC) plastic pipe. Provide water service line appurtenances as specified and where indicated.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's standard drawings or catalog cuts, except submit both drawings and cuts for push-on and rubber-gasketed bell-and-spigot joints. Include information concerning gaskets with submittal for joints and couplings.
 - 1. Piping Materials
 - 2. Water distribution main piping, fittings, joints, valves, and coupling
 - 3. Water service line piping, fittings, joints, valves, and coupling
 - 4. Hydrants
 - 5. Indicator posts
 - 6. Corporation stops
 - 7. Valve boxes
- B. Certificates: Certificates shall attest that tests set forth in each applicable referenced publication have been performed, whether specified in that publication to be mandatory or otherwise and that production control tests have been performed at the intervals or frequency specified in the publication. Other tests shall have been performed within 3

years of the date of submittal of certificates on the same type, class, grade, and size of material as is being provided for the project.

1. Water distribution main piping, fittings, joints, valves, and coupling
2. Water service line piping, fittings, joints, valves, and coupling
3. Shop-applied lining and coating
4. Lining
5. Fire hydrants

C. Manufacturer's Instructions

1. Installation procedures for water piping

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Storage: Inspect materials delivered to site for damage. Unload and store with minimum handling. Store materials on site in enclosures or under protective covering. Store plastic piping, jointing materials and rubber gaskets under cover out of direct sunlight. Do not store materials directly on the ground. Keep inside of pipes, fittings, valves and hydrants free of dirt and debris.
- B. Handling: Handle pipe, fittings, valves, hydrants, and other accessories in a manner to ensure delivery to the trench in sound undamaged condition. Take special care to avoid injury to coatings and linings on pipe and fittings; make satisfactory repairs if coatings or linings are damaged. Carry, do not drag pipe to the trench. Store plastic piping, jointing materials and rubber gaskets that are not to be installed immediately, under cover out of direct sunlight.

PART 2 - PRODUCTS

2.1 WATER DISTRIBUTION MAIN MATERIALS

A. Piping Materials

1. Ductile-Iron Piping
 - a. Pipe and Fittings: Pipe, ANSI/AWWA C151/A21.51, Thickness Class 51. Fittings, AWWA C110/A21.10 or AWWA C153/A21.53; fittings with push-on joint ends conforming to the same requirements as fittings with mechanical-joint ends, except that the bell design shall be modified, as approved, for push-on joint. Fittings shall have pressure rating at least equivalent to that of the pipe. Ends of pipe and fittings shall be suitable for the specified joints. Pipe and fittings shall have cement-mortar lining, AWWA C104/A21.4, standard thickness.
 - b. Joints and Jointing Material:
 - (1) Joints: Joints for pipe and fittings shall be mechanical joints.

- (2) Mechanical Joints: Dimensional and material requirements for pipe ends, glands, bolts and nuts, and gaskets, AWWA C111/A21.11.
 - (4) Flange for setscrewed flanges shall be of ductile iron, ASTM A 536, Grade 65-45-12, and conform to the applicable requirements of ASME/ANSI B16.1, Class 250. Setscrews for setscrewed flanges shall be 190,000 psi tensile strength, heat treated and zinc-coated steel. Gasket for setscrewed flanges, in accordance with applicable requirements for mechanical-joint gaskets specified in AWWA C111/A21.11. Design of setscrewed gasket shall provide for confinement and compression of gasket when joint to adjoining flange is made.
 - 2. Polyvinyl Chloride (PVC) Plastic Piping
 - a. Pipe and Fittings: Pipe, AWWA C900, shall be plain end or gasket bell end, Pressure Class 150 (DR 18) with cast-iron-pipe-equivalent OD. Fittings shall be gray iron or ductile iron, AWWA C110/A21.10 or AWWA C153/A21.53, and have cement-mortar lining, AWWA C104/A21.4, standard thickness. Fittings with push-on joint ends shall conform to the same requirements as fittings with mechanical-joint ends, except that bell design shall be modified, as approved, for push-on joint suitable for use with PVC plastic pipe specified in this paragraph.
 - b. Joints and Jointing Material: Joints for pipe shall be push-on joints, ASTM D 3139. Joints between pipe and metal fittings, valves, and other accessories shall be push-on joints ASTM D 3139, or compression-type joints/mechanical joints, ASTM D 3139 and AWWA C111/A21.11. Provide each joint connection with an elastomeric gasket suitable for the bell or coupling with which it is to be used. Gaskets for push-on joints for pipe, ASTM F 477. Gaskets for push-on joints and compression-type joints/mechanical joints for joint connections between pipe and metal fittings, valves, and other accessories, AWWA C111/A21.11, respectively, for push-on joints and mechanical joints. Mechanically coupled joints using a sleeve-type mechanical coupling, as specified in paragraph entitled "Sleeve-Type Mechanical Couplings," may be used as an optional jointing method in lieu of push-on joints on plain-end PVC plastic pipe, subject to the limitations specified for mechanically coupled joints using a sleeve-type mechanical coupling and to the use of internal stiffeners as specified for compression-type joints in ASTM D 3139.
 - 3. Polyethylene (PE) Plastic Piping: Pipe and heat-fusion fittings shall conform to AWWA C906.
- B. Valves, Hydrants, and Other Water Main Accessories
- 1. Gate Valves on Buried Piping: AWWA C500, AWWA C509, or UL 262. Unless otherwise specified, valves conforming to: (1) AWWA C500 shall be nonrising stem type with double-disc gates and mechanical-joint ends or push-on joint ends as appropriate for the adjoining pipe, (2) AWWA C509 shall be nonrising stem

type with mechanical-joint ends, and (3) UL 262 shall be inside-screw type with operating nut, double-disc or split-wedge type gate, designed for a hydraulic working pressure of 200 psi, and shall have mechanical-joint ends or push-on joint ends as appropriate for the pipe to which it is joined. Materials for UL 262 valves shall conform to the reference standards specified in AWWA C500. Valves shall open by counterclockwise rotation of the valve stem. Stuffing boxes shall have O-ring stem seals. Stuffing boxes shall be bolted and constructed so as to permit easy removal of parts for repair.

2. Gate Valves: AWWA C500, AWWA C509, or UL 262. Unless otherwise specified, valves conforming to: AWWA C509 shall be nonrising stem type with flanged ends and a working pressure of 200 psi. Stuffing boxes shall be bolted and constructed so as to permit easy removal of parts for repair.
3. Check Valves: Swing-check type, AWWA C508 or UL 312. Valves conforming to: (1) AWWA C508 shall have iron or steel body and cover and flanged ends, designed for a working pressure of 200 psi. Valves shall have clear port opening. Valves shall be spring-loaded.
4. Fire Hydrants: Dry-barrel type. Paint hydrants with at least one coat of primer and two coats of yellow enamel paint, except use red enamel paint for tops of hydrants in non-potable water systems. Stencil hydrant number and main size on the hydrant barrel using black stencil paint.
 - a. Dry-Barrel Type Fire Hydrants: Dry-barrel type hydrants, AWWA C502 or UL 246, "Base Valve" design, shall have 6 inch inlet, 5 1/4 inch valve opening, one 4 1/2 inch pumper connection, and two 2 1/2 inch hose connections. Pumper connection and hose connections shall be individually valved with independent nozzle gate valves. Inlet shall have mechanical-joint end only; end shall conform to the applicable requirements as specified for the joint. Size and shape of operating nut, cap nuts, and threads on hose and pumper connections shall be as specified in AWWA C502. Hydrants indicated as "traffic type," shall have frangible sections as mentioned in AWWA C502. The traffic type hydrant shall have special couplings joining upper and lower sections of hydrant barrel and shall be designed to have the special couplings break from a force not less than that which would be imposed by a moving vehicle; hydrant shall operate properly under normal conditions.
5. Indicator Posts: UL 789. Provide for gate valves where indicated.
6. Valve Boxes: Provide a valve box for each gate valve on buried piping, except where indicator post is shown. Valve boxes shall be of cast iron or precast concrete of a size suitable for the valve on which it is to be used and shall be adjustable. Provide a round head. Cast the word "WATER" on the lid. The least diameter of the shaft of the box shall be 5 1/4 inches. Cast-iron box shall have a heavy coat of bituminous paint.
7. Sleeve-Type Mechanical Couplings: Couplings shall be designed to couple plain-end piping by compression of a ring gasket at each end of the adjoining pipe sections. The coupling shall consist of one middle ring flared or beveled at each end to provide a gasket seat; two follower rings; two resilient tapered rubber

gaskets; and bolts and nuts to draw the follower rings toward each other to compress the gaskets. The middle ring and the follower rings shall be true circular sections free from irregularities, flat spots, and surface defects; the design shall provide for confinement and compression of the gaskets. For ductile iron and PVC plastic pipe, the middle ring shall be of cast-iron or steel; and the follower rings shall be of malleable or ductile iron. Gaskets shall be designed for resistance to set after installation and shall meet the applicable requirements specified for gaskets for mechanical joint in AWWA C111/A21.11. Bolts shall be track-head type, ASTM A 307, Grade A, with nuts, ASTM A 563, Grade A; or round-head square-neck type bolts, ANSI B18.5.2.1M and ANSI/ASME B18.5.2.2M with hex nuts, ASME/ANSI B18.2.2. Bolts shall be 5/8 inch in diameter. Bolt holes in follower rings shall be of a shape to hold fast the necks of the bolts used. Mechanically coupled joints using a sleeve-type mechanical coupling shall not be used as an optional method of jointing except where pipeline is adequately anchored to resist tension pull across the joint.

8. Tracer Wire for Nonmetallic Piping: Provide bare copper or aluminum wire not less than 0.10 inch in diameter in sufficient length to be continuous over each separate run of nonmetallic pipe.

2.2 WATER SERVICE LINE MATERIALS

A. Piping Materials

1. Plastic Piping: Plastic pipe and fittings shall bear the seal of the National Sanitation Foundation for potable water service. Plastic pipe and fittings shall be supplied from the same manufacturer.
 - a. Polyvinyl Chloride (PVC) Plastic Piping: ASTM D 1785, Schedule 40; or ASTM D 2241, with SDR as necessary to provide 150 psi minimum pressure rating. Fittings, ASTM D 2466. Pipe and fittings shall be of the same PVC plastic material and shall be one of the following pipe/fitting combinations, as marked on the pipe and fitting, respectively: PVC 1120/PVC I; PVC 1220/PVC 12; PVC 2120/PVC II; PVC 2116/PVC II. Solvent cement for jointing, ASTM D 2564.
2. Insulating Joints: Joints between pipe of dissimilar metals shall have a rubber-gasketed or other suitable approved type of insulating joint or dielectric coupling which will effectively prevent metal-to-metal contact between adjacent sections of piping.

B. Water Service Line Appurtenances

1. Corporation Stops: Ground key type; bronze, ASTM B 61 or ASTM B 62; and suitable for the working pressure of the system. Ends shall be suitable for solder-joint, or flared tube compression type joint. Threaded ends for inlet and outlet of corporation stops, AWWA C800; coupling nut for connection to flared copper tubing, ASME/ANSI B16.26.
2. Curb or Service Stops: Ground key, round way, inverted key type; made of bronze, ASTM B 61 or ASTM B 62; and suitable for the working pressure of the

- system. Ends shall be as appropriate for connection to the service piping. Arrow shall be cast into body of the curb or service stop indicating direction of flow.
3. Gate Valves on Buried Piping (3 Inches and Larger): Gate valves 3 inch size and larger on buried piping AWWA C500 or UL 262 and of one manufacturer. Valves, AWWA C500, nonrising stem type with double-disc gates. Valves, UL 262, inside-screw type with operating nut, split wedge or double disc type gate, and designed for a hydraulic working pressure of 175 psi. Materials for UL 262 valves conforming to the reference standards specified in AWWA C500. Valves shall open by counterclockwise rotation of the valve stem. Stuffing boxes shall have O-ring stem seals and shall be bolted and constructed so as to permit easy removal of parts for repair.
 4. Gate Valves on Buried Piping (Smaller Than 3 Inches): Gate valves smaller than 3 inch size on buried Piping MSS SP-80, Class 150, solid wedge, nonrising stem. Valves shall have flanged or threaded end connections, with a union on one side of the valve. Provide handwheel operators.
 5. Curb Boxes: Provide a curb box for each curb or service stop. Curb boxes shall be of cast iron of a size suitable for the stop on which it is to be used. Provide a round head. Cast the word "WATER" on the lid. Each box shall have a heavy coat of bituminous paint.
 6. Valve Boxes: Provide a valve box for each gate valve on buried piping. Valve boxes shall be of cast iron of a size suitable for the valve on which it is to be used and shall be adjustable. Provide a round head. Cast the word "WATER" on the lid. The least diameter of the shaft of the box shall be 5 1/4 inches.

PART 3 EXECUTION

3.1 INSTALLATION OF PIPELINES

- A. General Requirements for Installation of Pipelines: These requirements shall apply to all pipeline installation except where specific exception is made in the "Special Requirements..." paragraphs.
 1. Location of Water Lines: Terminate the work covered by this section at a point approximately 5 feet from the building, unless otherwise indicated. Do not lay water lines in the same trench with gas lines fuel lines or electric wiring.
 - a. Water Piping Installation Parallel With Sewer Piping
 - (1) Normal Conditions: Lay water piping at least 10 feet horizontally from a sewer or sewer manhole whenever possible. Measure the distance edge-to-edge.
 - (2) Unusual Conditions: When local conditions prevent a horizontal separation of 10 feet, the water piping may be laid closer to a sewer or sewer manhole provided that:
 - (a) The bottom (invert) of the water piping shall be at least 18 inches above the top (crown) of the sewer piping.

- (b) Where this vertical separation cannot be obtained, the sewer piping shall be constructed of AWWA-approved water pipe and pressure tested in place without leakage prior to backfilling.
 - (c) The sewer manhole shall be of watertight construction and tested in place.
 - b. Installation of Water Piping Crossing Sewer Piping
 - (1) Normal Conditions: Water piping crossing above sewer piping shall be laid to provide a separation of at least 18 inches between the bottom of the water piping and the top of the sewer piping.
 - (2) Unusual Conditions: When local conditions prevent a vertical separation described above, use the following construction:
 - (a) Sewer piping passing over or under water piping shall be constructed of AWWA-approved ductile iron water piping, pressure tested in place without leakage prior to backfilling.
 - (b) Water piping passing under sewer piping shall, in addition, be protected by providing a vertical separation of at least 18 inches between the bottom of the sewer piping and the top of the water piping; adequate structural support for the sewer piping to prevent excessive deflection of the joints and the settling on and breaking of the water piping; and that the length, minimum 20 feet, of the water piping be centered at the point of the crossing so that joints shall be equidistant and as far as possible from the sewer piping.
 - c. Sewer Piping or Sewer Manholes: No water piping shall pass through or come in contact with any part of a sewer manhole.
- 2. Earthwork: Perform earthwork operations in accordance with Section 02200, "Earthwork."
- 3. Pipe Laying and Jointing: Remove fins and burrs from pipe and fittings. Before placing in position, clean pipe, fittings, valves, and accessories, and maintain in a clean condition. Provide proper facilities for lowering sections of pipe into trenches. Do not under any circumstances drop or dump pipe, fittings, valves, or any other water line material into trenches. Cut pipe accurately to length established at the site and work into place without springing or forcing. Replace by one of the proper length any pipe or fitting that does not allow sufficient space for proper installation of jointing material. Blocking or wedging between bells and spigots will not be permitted. Lay bell-and-spigot pipe with the bell end pointing in the direction of laying. Grade the pipeline in straight lines; avoid the formation of dips and low points. Support pipe at proper elevation and grade. Secure firm, uniform support. Wood support blocking will not be permitted. Lay pipe so that the full length of each section of pipe and each fitting will rest solidly on the pipe bedding; excavate recesses to accommodate bells, joints, and couplings. Provide anchors and supports where necessary for fastening work into place. Make proper provision for expansion and contraction of pipelines. Keep trenches free of water until joints have been properly made. At the end of each

work day, close open ends of pipe temporarily with wood blocks or bulkheads. Do not lay pipe when conditions of trench or weather prevent installation. Depth of cover over top of pipe shall not be less than 2 1/2 feet.

4. Installation of Tracer Wire: Install a continuous length of tracer wire for the full length of each run of nonmetallic pipe. Attach wire to top of pipe in such manner that it will not be displaced during construction operations.
5. Connections to Existing Water Lines: Make connections to existing water lines after approval is obtained and with a minimum interruption of service on the existing line. Make connections to existing lines under pressure in accordance with the recommended procedures of the manufacturer of the pipe being tapped, except as otherwise specified, tap concrete pipe in accordance with AWWA M9 for tapping concrete pressure pipe.

B. Special Requirements for Installation of Water Mains

1. Installation of Ductile-Iron Piping: Unless otherwise specified, install pipe and fittings in accordance with paragraph entitled "General Requirements for Installation of Pipelines" and with the requirements of AWWA C600 for pipe installation, joint assembly, valve-and-fitting installation, and thrust restraint.
 - a. Jointing: Make mechanical joints with the gaskets, glands, bolts, and nuts specified for this type joint; assemble in accordance with the applicable requirements of AWWA C600 for joint assembly and the recommendations of Appendix A to AWWA C111/A21.11. Assemble joints made with sleeve-type mechanical couplings in accordance with the recommendations of the coupling manufacturer. Make insulating joints with the gaskets, sleeves, washers, bolts, and nuts previously specified for this type joint. Assemble insulating joints as specified for flanged joints, except that bolts with insulating sleeves shall be full size for the bolt holes. Ensure that there is no metal-to-metal contact between dissimilar metals after the joint has been assembled.
 - b. Pipe Anchorage: Provide concrete thrust blocks for pipe anchorage. Thrust blocks shall be in accordance with the requirements of AWWA C600 for thrust restraint, except that size and positioning of thrust blocks shall be as indicated. Use concrete, ASTM C 94, having a minimum compressive strength of 2,500 psi at 28 days; or use concrete of a mix not leaner than one part cement, 2 1/2 parts sand, and 5 parts gravel, having the same minimum compressive strength. Metal harness, if required, shall be in accordance with the requirements of AWWA C600 for thrust restraint, using tie rods and clamps as shown in NFPA 24, except as otherwise indicated.
2. Installation of PVC Plastic Water Main Pipe: Installation of PVC Plastic Water Main Pipe and Associated Fittings: Unless otherwise specified, install pipe and fittings in accordance with paragraph entitled "General Requirements for Installation of Pipelines"; with the requirements of UBPPA UNI-B-3 for laying of pipe, joining PVC pipe to fittings and accessories, and setting of hydrants, valves,

and fittings; and with the recommendations for pipe joint assembly and appurtenance installation in AWWA M23, Chapter 7, "Installation."

- a. Jointing: Make push-on joints with the elastomeric gaskets specified for this type joint, using either elastomeric-gasket bell-end pipe or elastomeric-gasket couplings. For pipe-to-pipe push-on joint connections, use only pipe with push-on joint ends having factory-made bevel; for push-on joint connections to metal fittings, valves, and other accessories, cut spigot end of pipe off square and re-bevel pipe end to a bevel approximately the same as that on ductile-iron pipe used for the same type of joint. Use an approved lubricant recommended by the pipe manufacturer for push-on joints. Assemble push-on joints for pipe-to-pipe joint connections in accordance with the requirements of UBPPA UNI-B-3 for laying the pipe and the recommendations in AWWA M23, Chapter 7, "Installation," for pipe joint assembly. Assemble push-on joints for connection to fittings, valves, and other accessories in accordance with the requirements of UBPPA UNI-B-3 for joining PVC pipe to fittings and accessories and with the applicable requirements of AWWA C600 for joint assembly. Make compression-type joints/mechanical joints with the gaskets, glands, bolts, nuts, and internal stiffeners previously specified for this type joint; assemble in accordance with the requirements of UBPPA UNI-B-3 for joining PVC pipe to fittings and accessories, with the applicable requirements of AWWA C600 for joint assembly, and with the recommendations of Appendix A to AWWA C111/A21.11. Cut off spigot end of pipe for compression-type joint/mechanical-joint connections and do not re-bevel. Assemble joints made with sleeve-type mechanical couplings in accordance with the recommendations of the coupling manufacturer using internal stiffeners as previously specified for compression-type joints.
 - b. Pipe Anchorage: Provide concrete thrust blocks for pipe anchorage. Thrust blocks shall be in accordance with the requirements of UBPPA UNI-B-3 for reaction or thrust blocking and plugging of dead ends, except that size and positioning of thrust blocks shall be as indicated. Use concrete, ASTM C 94, having a minimum compressive strength of 2,500 psi at 28 days; or use concrete of a mix not leaner than one part cement, 2 1/2 parts sand, and 5 parts gravel, having the same minimum compressive strength.
3. Installation of Polyethylene (PE) Plastic Piping: PE pipes shall be installed in accordance with ASTM D 2774.
 4. Installation of Valves and Hydrants
 - a. Installation of Valves: Install gate valves, AWWA C500 and UL 262, in accordance with the requirements of AWWA C600 for valve-and-fitting installation and with the recommendations of the Appendix ("Installation, Operation, and Maintenance of Gate Valves") to AWWA C500. Install gate valves, AWWA C509, in accordance with the requirements of AWWA C600 for valve-and-fitting installation and with the

recommendations of the Appendix ("Installation, Operation, and Maintenance of Gate Valves") to AWWA C509. Install gate valves on PVC water mains in accordance with the recommendations for appurtenance installation in AWWA M23, Chapter 7, "Installation." Install check valves in accordance with the applicable requirements of AWWA C600 for valve-and-fitting installation, except as otherwise indicated. Make and assemble joints to gate valves and check valves as specified for making and assembling the same type joints between pipe and fittings.

- b. Installation of Hydrants: Install hydrants in accordance with AWWA C600 for hydrant installation and as indicated. Make and assemble joints as specified for making and assembling the same type joints between pipe and fittings. Install hydrants with the 4 1/2 inch connections facing the adjacent paved surface. If there are two paved adjacent surfaces, contact the Owner for further instructions.

C. Installation of Water Service Piping

1. Location: Connect water service piping to the building service where the building service has been installed. Where building service has not been installed, terminate water service lines approximately 5 feet from the building line at the point indicated; such water service lines shall be closed with plugs or caps.
2. Service Line Connections to Water Mains: Connect service lines 2 inch size and smaller to the main by a corporation stop and gooseneck and install a service stop below the frostline. Connect service lines to ductile-iron water mains in accordance with AWWA C600 for service taps. Connect service lines to PVC plastic water mains in accordance with UBPPA UNI-B-8 and the recommendations of AWWA M23, Chapter 9, "Service Connections."

D. Special Requirements for Installation of Water Service Piping

1. Installation of Plastic Piping: Install pipe and fittings in accordance with paragraph entitled "General Requirements for Installation of Pipelines" and with the applicable requirements of ASTM D 2774, unless otherwise specified. Handle solvent cements used to join plastic piping in accordance with ASTM F 402.
 - a. Jointing: Make solvent-cemented joints for PVC plastic piping using the solvent cement previously specified for this material; assemble joints in accordance with ASTM D 2855. Make plastic pipe joints to other pipe materials in accordance with the recommendations of the plastic pipe manufacturer.
 - b. Plastic Pipe Connections to Appurtenances: Connect plastic pipe service lines to corporation stops and gate valves in accordance with the recommendations of the plastic pipe manufacturer.

- E. Disinfection: Disinfect new water piping and existing water piping affected by Contractor's operations in accordance with AWWA C651. Fill piping systems with solution containing minimum of 50 parts per million of available chlorine and allow

solution to stand for minimum of 24 hours. Flush solution from the systems with domestic water until maximum residual chlorine content is within the range of 0.2 and 0.5 parts per million, or the residual chlorine content of domestic water supply. Obtain at least two consecutive satisfactory bacteriological samples from new water piping, analyze by a certified laboratory, and submit the results prior to the new water piping being placed into service. Disinfection of systems supplying nonpotable water is not required.

3.2 FIELD QUALITY CONTROL

- A. Field Tests and Inspections: The Owner will conduct field inspections and witness field tests specified in this section. The Contractor shall perform field tests, and provide labor, equipment, and incidentals required for testing. The Contractor shall produce evidence, when required, that any item of work has been constructed in accordance with the drawings and specifications.
- B. Testing Procedure: Test water mains and water service lines in accordance with the applicable specified standard, except for the special testing requirements given in paragraph entitled "Special Testing Requirements." Test ductile-iron water mains in accordance with the requirements of AWWA C600 for hydrostatic testing. The amount of leakage on ductile-iron pipelines with mechanical-joints shall not exceed the amounts given in AWWA C600; no leakage will be allowed at joints made by any other method. Test PVC plastic water mains and water service lines made with PVC plastic water main pipe in accordance with the requirements of UBPPA UNI-B-3 for pressure and leakage tests. The amount of leakage on pipelines made of PVC plastic water main pipe shall not exceed the amounts given in UBPPA UNI-B-3, except that at joints made with sleeve-type mechanical couplings, no leakage will be allowed.
- C. Special Testing Requirements: For pressure test, use a hydrostatic pressure 50 psi greater than the maximum working pressure of the system, except that for those portions of the system having pipe size larger than 2 inches in diameter, hydrostatic test pressure shall be not less than 200 psi. Hold this pressure for not less than 2 hours. Prior to the pressure test, fill that portion of the pipeline being tested with water for a soaking period of not less than 24 hours. For leakage test, use a hydrostatic pressure not less than the maximum working pressure of the system. Leakage test may be performed at the same time and at the same test pressure as the pressure test.

END OF SECTION 02510

SECTION 02511

ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 CONDITIONS AND REQUIREMENTS

- A. The General Conditions, Supplementary Conditions and Division 1-General Requirements apply.

1.3 RELATED WORK SPECIFIED ELSEWHERE IN THE SPECIFICATIONS

- A. Earthwork - Section 02200

1.4 QUALITY ASSURANCE

- A. Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The publications shall be the most current issue.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
ASTM D 1557 Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))

FLORIDA DEPARTMENT OF TRANSPORTATION (D.O.T.):
Standard Specifications for Road and Bridge Construction

1.5 JOB CONDITIONS

- A. After final rolling, protect newly placed material from traffic by barricades or other suitable methods until it has hardened, and in no case sooner than 6 hours.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Paving Materials:
1. Fill: sand and/or rock, containing not over 40 percent rock, two inches maximum in size.
 2. Base Course: Graded aggregate base as noted on the drawings.
 3. Tack Coat: asphalt cement, penetration grade 85-100 percent or emulsified asphalt, DOT Grade RS-2.
 4. Surface Course: FDOT Type SP12.5 and SP9.5 asphaltic concrete.

PART 3 - EXECUTION

3.1 GENERAL

- A. Connections to Existing Paving: To be as neat and inconspicuous as practicable. Connections to be approved by the Engineer.
- B. Patching Existing Pavement: Repair existing pavement if damaged or removed due to construction activities as indicated on the drawings, or as necessary, as designated by the Engineer.

3.2 PAVING INSTALLATION

- A. Subgrade Preparation:
 - 1. Bring bottom of subgrade between outer limits of paving or base course to a surface conforming to grades and lines.
 - 2. Machine compact existing subgrade to 98 percent of maximum dry density in accordance with ASTM D 1557 Method A, for a depth of 12 inches, minimum LBR40.
 - 3. Provide additional fill where required under paved area and compact as specified above. Apply in layers not to exceed 12 inch.
- B. Base Course:
 - 1. Spread base material uniformly, scarify and then shape to produce required grades after completion.
 - 2. Rough grade, roll, finish grade and then water and roll base until a thoroughly bonded, unyielding and compact base is obtained.
 - 3. Thickness after compaction: 6" minimum.
 - 4. Compact base course to 98% of maximum density in accordance with ASTM D 1557, minimum LBR100.
 - 5. Maintain grades shown on drawings. Correct all irregularities greater than 1/4 in. in 15 ft.
- C. Surface Course:
 - 1. Thickness as shown on the drawings to be laid only when the surface is dry and weather conditions are suitable.
 - 2. Spread mixture with approved mechanical spreaders.
 - a. Seal roll mixture using tandem steel rollers weighing 10 tons and following as close behind spreader as possible.
 - b. Then roll with self-propelled pneumatic tired rollers covering every portion of surface with at least six passes.
 - c. Then final roll surface with 10 ton tandem steel rollers before temperature of mixture has dropped below 140 degrees F. Continue rolling until all roller and tire marks have been eliminated.
 - 3. Trim all open edges straight and true.
 - 4. Finish surface not to vary more than 1/4 in. in 15 ft. when measured in any direction, and provide for free drainage of water.
 - 5. Rework areas that pocket water to a depth of more than 1/16 in.
- D. Concrete Curbs:
 - 1. Concrete Curbs for driveways, roads, and parking areas shall be as shown on the drawing. Concrete shall be 3000 psi @ 28 days. Contraction joints are to be provided at 10' C-C. Expansion joints with filler material are to be provided at 30' C-C.

GULF BREEZE COMMUNITY CENTER
CITY OF GULF BREEZE, FLORIDA

- E. General Construction:
 - 1. All subgrade, base, and surface paving construction shall be in accordance with latest copy of F.D.O.T. "Standard Specifications For Road and Bridge Construction", latest edition.
- F. Guarantee:
 - 1. Contractor shall guarantee pavement for a period of 12 months following acceptance by the Owner and Engineer. Any failure, as determined by the Engineer, will be removed and replaced by the Contractor at his expense.

END OF SECTION 02511

SECTION 02512

TENNIS COURT COATINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Coating and resurfacing existing and proposed asphalt tennis courts.

1.2 REGULATORY REQUIREMENTS

- A. Conform to industry standards.

PART 2 - EXECUTION

2.1 PREPARATION

- A. Clean and prepare new and existing court surfaces in accordance to coating manufactures recommendations.
- B. Inspect and repair all cracks and surface depressions with World Class Athletic Surfaces Cort-Fix I crack repair or engineer approved equal. Apply crack repair per manufactures recommendations.
- C. Contractor shall flood entire court area both new and existing and apply World Class Athletic Surfaces Cort-Fix II bird bath filler or engineered approved equal to all bird baths deeper than 1/16" and larger than 2 feet in diameter shall be corrected. Apply additional coatings as required to alleviate depression.

2.2 APPLICATION

- A. Apply World Class Color Coating System per manufactures recommendations or engineer approved equal to new and existing tennis courts. Apply two coats of Acrylic Resurfacer Coat, two Texture Color coats and two Texture White line coats. All playing line markings shall be in accordance with USTA rules and regulations. Court colors shall be Delta Blue interior with Medium Green boarder.

2.3 CLEAN UP

- A. Remove any over lapping coats from adjacent surfaces.

END OF SECTION 02512

SECTION 02520

CONCRETE CURB & GUTTER AND SIDEWALKS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. The work specified in this Section consists of the construction of Portland cement concrete curb and gutter, concrete traffic separator, valley gutter, special concrete gutter, and any other types of concrete curb not specified in other Sections. The various items shall be constructed in accordance with these specifications and in conformity with the lines, grades, dimensions and notes shown in the plans.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Concrete: All work under this Section shall be of Class I Concrete as specified in Section 347 of the Florida Department of Transportation Specifications for Road and Bridge Construction, 2010, hereinafter referred to as F.D.O.T. Specifications.
- B. Reinforcement: Any steel reinforcement required by the plans shall conform to the requirements of Section 415 of the F.D.O.T. Specifications.
- C. Joint Materials: Joint materials for the various items shall be in accordance with Section 932 of the F.D.O.T. Specifications.

2.2 FORMS

- A. Form Materials: Forms for this work shall be made of either wood or metal. They shall be straight, free from warp or bends and of sufficient strength, when staked, to resist the pressure of the concrete without deviation from line and grade. For all items constructed on a radius, the Contractor will be required to use flexible forms, unless otherwise permitted by the Engineer.
- B. Depth of Forms: Forms shall have a depth equal to the plan dimensions for the depth of concrete being deposited against them.
- C. Machine Placement: Placing of these items by machine methods may be allowed with the approval of the Engineer provided that an acceptable finished product, true to line, grade and cross section, is consistently produced.

PART 3 - EXECUTION

3.1 EXCAVATION

- A. Excavation shall be to the required depth, and the foundation material upon which these items are to be placed shall be compacted as specified in Section 120-9 of the F.D.O.T. Specifications.

3.2 PLACING CONCRETE

- A. The concrete shall be placed in the forms and tamped and spaded to prevent honeycomb and until the top of the structure can be floated smooth and the edges rounded to the radii shown in the plans.

3.3 JOINTS

- A. Contraction Joints:
 - 1. Except for machine placed items, at the option of the Contractor, joints may be formed by the use of dummy joints (either formed or sawed) or by the use of sheet metal templates. If sheet metal templates are used they shall be of the dimensions, and shall be set to the lines shown in the plans. The templates shall be held firmly during the placing of the concrete and shall be left in place until the concrete has set sufficiently to hold its shape but shall be removed while the forms are still in place.
 - 2. For machine placed items, unless an alternate method is approved by the Engineer, contraction joints shall be sawed. The joints shall be sawed as soon as the concrete has hardened to the degree that excessive raveling will not occur and before uncontrolled shrinkage cracking begins.
 - 3. Contraction joints shall be spaced at intervals of 3 m (10') except where a lesser interval is required for closure, but no section shall be less than 1.2m (4') in length.
- B. Expansion Joints: Expansion joints shall be constructed at all inlets, at all radius points, and at other locations indicated in the plans. The joint shall be ½" in width.

3.4 FINISHING

- A. Repair of Minor Defects: The forms shall be removed within 24 hours after the concrete has been placed, and minor defects then filled with mortar composed of one part Portland cement and two parts fine aggregate. Plastering will not be permitted on the face of the curb, and any rejected curb, curb and gutter, or valley gutter shall be removed and replaced without additional compensation.
- B. Final Finish: All exposed surfaces shall be given a finish while the concrete is still green. In general, only a brush finish will be required. For any surface areas, however, which are too rough or where other surface defects make additional finishing necessary, the Engineer may require that the curb be rubbed to a smooth surface with a soft brick or wood block, with water used liberally. Also, if necessary further to provide a suitable surface, the Engineer may require additional rubbing, using a thin grout or mortar.

3.5 CURING

- A. General:
 - 1. The concrete shall be continuously cured for a period of at least 72 hours. Curing shall be commenced after finishing has been completed and as soon as the concrete has hardened sufficiently to permit application of the curing material without marring the surface. Any curing material removed or damaged during the 72-hour period shall be replaced immediately.

2. After forms are removed, the surfaces exposed shall be cured by lacing a berm of moist earth against them or by any of the methods described below, for the remainder of the 72-hour curing period.
- B. Membrane Curing Compound Method: Clear membrane curing compound or white-pigmented curing compound, as specified in 925-2 of the F.D.O.T. Specifications, shall be applied by a hand sprayer meeting the requirements of 350-3.10 of the F.D.O.T. Specifications, in a single-coat continuous film at a uniform coverage of at least 0.2 L/m² (1 gallon/200 S.F.). Any cracks, checks or other defects appearing in the coating shall be recoated immediately. The curing compound shall be thoroughly agitated in the drum prior to application, and during application as necessary to prevent settlement of the pigment.
 - C. Polyethylene Sheeting Method: Polyethylene sheeting, as specified in 925-3 of the F.D.O.T. Specifications, shall be placed over the entire exposed surface of the concrete, with sufficient extension beyond each side to insure complete coverage. Adjacent strips shall be overlapped a minimum of 150 mm (6"). The sheeting shall be held securely in place such that it will be in continuous contact with the concrete at all times.

3.6 BACKFILLING AND COMPACTION

- A. After the concrete has set sufficiently, but not later than 3 days after pouring, the spaces in front and back of the curb shall be refilled to the required elevation, with suitable material, which shall be placed and thoroughly compacted in layers not thicker than 6".

3.7 SURFACE REQUIREMENTS

- A. The gutter section of curb and gutter shall be tested with a 10' straightedge laid parallel to the center line of the roadway, and while the concrete is still plastic. Straight edging shall be done along the edge of the gutter adjacent to the pavement or along other lines on the gutter cross section, as directed by the Engineer. Irregularities in excess of 1/4" shall be immediately corrected.

END OF SECTION 02520

SECTION 2570

SANITARY SEWERS

PART 1 – GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Earthwork: Section 02200.

1.2 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Store materials to prevent physical damage.
- B. Protect materials during transportation and installation to avoid physical damage.

1.3 GENERAL DESCRIPTION OF WORK COVERED

- A. Furnish and install all sewer pipe, fittings and structures, and accessories required for sanitary sewer construction as indicated.

1.4 QUALITY ASSURANCE

- A. Comply with latest published editions of American Society of Testing and Materials (ASTM) Standards:
 - 1. ASTM C478 - Concrete Pipe Manholes.
 - 2. ASTM D1784 - Rigid Poly (vinyl chloride) (PVC) Compounds and Chlorinated Poly (vinyl chloride) (CPVC) Compounds.
 - 3. ASTM D2321 - Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.
 - 4. ASTM D2564 - Solvent Cements for Poly Plastic Pipe and Fittings.
 - 5. ASTM D3212 - Joints for Drain and Sewer Plastic Pipes using Flexible Elastomeric Seals.
 - 6. ASTM D3034 Type PSM - PVC Sewer Pipe and Fittings.

PART 2 – MATERIALS AND EQUIPMENT

2.1 GENERAL REQUIREMENTS

- A. Pipe furnished shall be PVC for sanitary sewer construction unless shown otherwise on plans or bid forms.

- B. All pipe shall be marked in accordance with applicable standard specification under which pipe is manufactured unless otherwise specified.

2.2 DELIVERY, STORAGE AND HANDLING

- A. Certificates of Compliance with the Specifications shall be required for all materials used on the Project. All materials shall be protected during transportation, storage, handling, and installation to avoid physical deterioration due to sun and weather. The Utility Authority having jurisdiction reserves the right to reject material which in any way does not meet the requirements of these Specifications.

2.3 SEWER MAINS

- A. Polyvinyl Chloride Plastic Pipe (PVC)
1. Comply with ASTM D3034 for pipe using material conforming to ASTM D1784 for pipe and fittings.
 2. Use single elastomeric gasket push-on joints complying with ASTM D3212.
 3. Provide pipe and fittings with minimum SDR-35 dimension ratio.
 4. SDR 35 shall be used for service laterals.
 5. Pipe shall be color coded by the following method:
 - a. Use pipe pigment to color code pipe green.

2.4 STRUCTURES AND PIPE ACCESSORIES

- A. Fittings
1. Fittings shall be allowed only on service laterals and drop manholes.
 2. Fittings shall equal or exceed quality and strength of pipe.
 3. Wyes shall be long bell type.
- B. Manholes & Sections
1. Construction shall be precast reinforced concrete capable of sustaining an H-20 loading.
 2. Manholes shall be constructed in accordance with ASTM C-478, using Type II or Type III Portland Cement.
 3. Leakage shall not exceed 1 gallon per day per vertical foot of manhole.
 4. Manholes shall have a minimum I.D. of 48 inches, unless otherwise noted on plans.
 5. Base section shall be monolithic to a point 6" above the crown of the incoming pipe with minimum thick bottom section and 5" wall section and made in accordance with ASTM C-478.
 6. Pipe holes shall be properly located and either cast in place with appropriate boot or required shape, or core drilled after concrete has set. Minor field adjustments may be made with approval of the Utility Authority with jurisdiction. The invert of the lowest pipe shall be a minimum of 4" above the inside floor of the base section.

7. Cone (top) sections shall be eccentric narrowing from 48" to 24" I.D., unless otherwise noted on plans.
8. Flat top sections shall be used in place of cone sections for manholes less than 5 feet deep. The access hole shall be offset to allow easy access to steps (if used) and shall be reinforced to support an H-20 loading.
9. Shallow manholes less than 3 feet deep shall be constructed according to the appropriate Utility Authority detail drawing.
10. The joints between sections shall be one of the following:
 - a. Lap joint design with the upper lip inside and suitably shaped to accommodate a bitumastic joint sealer,
 - b. Rubber "O" ring gasket.
11. Pipe to manhole seals shall be made utilizing one of the following or approved equivalent.
 - a. Kore-N-Seal or, Lock-Joint, with stainless steel bands and screws.
 - b. A-LOK.
12. Brick manholes shall only be used with consent of Architect/Engineer.

C. Manhole Accessories

1. Manhole Lid and Cover
 - a. Gray cast iron, with nominal opening of 24 inches.
 - b. Cover shall be embossed with "SANITARY SEWER" as shown on detail drawings.
 - c. The lifting holes shall not extend through cover.
 - d. Use Vulcan Model VM-37, USF 170E or approved equivalent for lids not requiring bolting features.
 - e. Use Vulcan Model VM-360WT or approved equivalent for bolted covers.
 - f. Use Vulcan Model VM-50 or approved equivalent for specified flood areas.
 - g. Use Certain Teed RE 85 R3 FD with Anti-theft locking key (RE 80 K9 FD) for lids requiring locking features.
2. Manhole Coating
 - a. Apply two coats of a foundation coating or approved equivalent to the interior and to the exterior.
 - b. Steps
 - (1) Shall be embedded in the concrete by the manhole manufacturer at 12" on center spacing from the top of the manhole cone to bench.
 - (2) Steps shall be grade 60 steel bar reinforced ABS plastic, with non-slip rungs, guaranteed for use in sewers.

PART 3 – EXECUTION

3.1 GENERAL

- A. Provide all labor, equipment and materials and install all pipe, fitting, specials and appurtenances as indicated or specified.

3.2 PIPE INSTALLATION

- A. Handling
1. Handle and store pipe in a manner to insure installation in sound and undamaged condition, and in accordance with pipe manufacturer's requirements.
 - a. Do not drop, bump, roll or drag.
 - b. Use slings, lifting lugs, hooks and other devices designed to protect pipe, joint elements, and coatings.
 2. Ship, move and store with provisions to prevent movement or shock contact with adjacent units.
 3. Handle with equipment capable of work with adequate factor of safety against overturning or other unsafe procedures.
- B. Installation
1. Utilize equipment, methods, and materials insuring installation to lines and grades as indicated.
 - a. Do not lay on blocks unless pipe is to receive total concrete encasement.
 - b. Use calibrated laser or minimum of 3 batter boards for control of line and grade.
 2. Install pipe of size, material, strength class, and joint type with embedment shown for plan location.
 3. Insofar as possible, commence laying at downstream end of line and install pipe with bell ends in direction of laying (upstream). Sewer pipe shall have spigot ends in direction of flow. Obtain approval for deviations therefrom.
 4. Clean interior of all pipe, fittings and joints prior to installation. Exclude entrance of foreign matter during discontinuance of installation.
 - a. Close open ends of pipe with watertight plugs at the end of each work day.
 - b. Do not let water enter trench. Pipe shall be laid in a dry trench. Include provisions to prevent pipe flotation and displacement should water control measures prove inadequate.
 - c. Remove water, sand, mud and other undesirable materials from trench before removal of end cap or plugs.
 5. Inspect pipe prior to installation to determine if any pipe defects are present.
 6. Brace or anchor as required to prevent displacement after establishing final position.
 7. Perform only when weather and trench conditions are suitable.
 8. Observe extra precaution when hazardous atmospheres might be encountered, especially when connecting to existing, active sanitary sewers.

9. Separation Of Sanitary Sewer Lines and Potable Water Lines.
 - a. When a gravity sewer line must cross under a water line with less than 18-inch vertical clearance, one of the following methods may be used:
 - (1) Fully encase sewer line with a minimum of 4 inches of concrete (2500 psi) for a minimum distance of 10 feet either side of the point of crossing, which must be at least 5 feet from a water line joint. If the crossing is other than at right angles, increase the length of encasement so that the end of the encasement will be at least 12 feet from a water line joint.
 - (2) Use equally rated pressure pipe for the sewer lines with no joints closer than 12 feet apart and at least 6-inch vertical clearance.
 - (3) Install sewer pipe into at least a 20-foot section of steel casing (casing I.D. slightly larger than sewer pipe bell OD) and center over crossing so that end of casing will be at least 12 feet from water line joint. Seal the ends of the casing with non-shrink grout.
 - b. When a gravity sewer line must cross over a potable water line, regardless of clearance, because the water line cannot be relayed above sewer, use method 2) or 3) in subsection a. Concrete encasement will not be allowed.
 - c. When a sanitary force main must cross under a potable water line with less than an 18-inch vertical clearance, or over the water line, use a higher rated pressure pipe as in method 2) or 3) in subsection a.
 - d. When the water line being crossed in a, b or c is a house or building service lateral, 2-inch or smaller and the service lateral is a continuous piece of PE DR9 tubing, then the above rules do not apply; but locate so that the distance to a sewer or force main joint is as great as possible.
 - e. When a gravity sewer line must run parallel to and less than 18 inches below a potable water line and:
 - (1) 6 to 10 feet apart for less than 40 feet, use method 1), 2) or 3) in subsection a.
 - (2) 6 to 10 feet apart for over 40 feet, use method a. 2) and stagger joints.
 - (3) 3 to 6 feet apart for any distance, use a higher rated pressure pipe as in method a. 2).
 - f. When a sanitary force main must run parallel to and less than 18 inches below a potable water line and:
 - (1) 6 to 10 feet apart for any distance, use a higher rated pressure pipe as in method a. 2).
 - (2) 3 to 6 feet apart, use a higher rated pressure pipe for both water and force main. Example: If force main is PC160 PVC DR26, and water line is C-900 DR25; then force main should be PVC DR21 and water line should be DR21, using extreme care to have both properly color-coded.
10. Auger or jack casing in place where shown on plans.
11. Maintain minimum of 30 inches of cover unless directed by Engineer.

12. Encase sewer pipe in steel casing or use ductile iron pipe when crossing under pipe, conduit, or structure of 24 inches in diameter or greater when a 6-inch separation distance cannot be maintained. This protection shall extend a minimum of 5 feet beyond crossed structure.
- C. Jointing General Requirements
1. Perform in accordance with manufacturer's recommendations.
 2. Clean and lubricate all joint and gasket surfaces with lubricant recommended.
 3. Utilize methods and equipment capable of fully homing or making up joints without damage.
 4. Check joint opening and deflection for specification limits.
- D. Closure Pieces
1. Connect two segments of pipelines or a pipeline segment and existing structure with short sections of pipe fabricated for the purpose.
 2. Observe specifications regarding location of joints, type of joints and pipe materials and strength classifications.
- E. Temporary Plugs
1. Furnish, install and secure water tight temporary plugs at each end of work for removal by others when completed ahead of adjacent contract or where indicated.
 2. Remove from pipe laid under separate or prior contract in order to complete pipe connection when work by other contractor is finished prior to work at connection point under this contract.
 3. Permanent Plugs
 - a. Use test plugs as manufactured by pipe supplier, or
 - b. Fabricate by Contractor of substantially same construction.
 - c. Must be watertight against heads up to 20 feet of water.
 - d. Secure in place in a manner to facilitate removal when required to connect pipe.

3.3 MANHOLE INSTALLATION

- A. Precast Bases
1. Place on 12-inch layer of compacted sand, gravel or sandy material as approved by Engineer.
 2. Base shall be leveled prior to installation of manhole sections.
- B. Cast In Place Bases
1. Cast on 12-inch layer of compacted sand, gravel or sandy material as approved by Engineer.
 2. Manhole bases and channel inverts may be constructed integrally.
- C. Manhole Sections
1. Use precast sections unless cast-in-place manholes approved by Engineer.

2. Precast sections may be installed after base concrete has attained 75% of design strength.
 3. Full circumference seals between manhole sections shall use one of the following or approved equivalent.
 - a. Bitumastic Seal (Kent No. 2, Ram Neck)
 - b. Rubber "O" ring gasket
- D. Invert Channels
1. Form invert channel as indicated.
 2. Alternate invert and shelf may be constructed of mortar over concrete fill with approval of Engineer.
 3. Make changes in direction of flow with smooth curves of as large a radius as size of manhole permits.
 4. Make changes in size and grade smoothly and uniformly.
 5. Slope shelf of manhole adjacent to channels, toward the channels, and rough broom finish to provide a non-slip surface.
 6. Finish channel bottom smoothly without roughness, irregularity, or pockets.
 7. On straight through single pipe manholes, half sections of same pipe may be used with mortar and concrete with approval of Engineer.
 8. Precast inverts in base sections are acceptable with approval from the appropriate Utility Authority Engineering Department.
- E. Pipe Connection Into Manholes
1. Make watertight.
 2. Use specified pipe to manhole seals or other as approved by Architect/Engineer.
- F. Field applied coatings shall be applied after Engineer's approval of structure.

3.4 SERVICE CONNECTIONS

- A. Service lines shall be located in accordance with requirements in the appropriate Utility Authority Code. Refer to the Code for clarification of availability of facilities and responsibilities of customer for the installation of service lines.
- B. Install service connections to each residential lot or individual business lot or property, or as directed by Engineer.
- C. Services wyes: install long bell type wyes, 4-inch branch diameter unless shown otherwise on plans. See the appropriate Utility Authority standard detail, "Typical Service Connection".
- D. Risers: may be used with wyes for service connections where invert of sewer is 7 feet or more below ground surface or where shown on plans. Terminate each connection as shown on plans or as directed by Engineer. Glued 45 degree bends may be used on end of lateral, within grassy, or unpaved, areas.

- E. Glue cap on end of stub out.
- F. Backfill trench only after recording exact location and depth of service connection.
- G. Street crossings shall have a minimum of 2 feet of cover to subgrade unless approved by Engineer.

3.5 CONNECTION OF SERVICE LINES AND SEWER SYSTEM FACILITIES

- A. Existing Service Lines and New Sewer Main: Connect existing sanitary service lines which cross new sewer line through equal sized wye.
- B. New Service Line Connections to Existing Manholes:
 - 1. Insert new sewer pipe flush with inside of manhole.
 - 2. Connect new lines to existing manholes. Seal new pipe in place to be watertight.
 - 3. Reconstruct manhole channel and shelf to suit new connection.
 - 4. All debris to be removed.
- C. Connections to Existing Sewer
 - 1. Build new manhole around existing sewer.
 - 2. Break out existing sewer inside of manhole and construct channel and shelf to suit new connection.

PART 4 – ACCEPTANCE

4.1 ACCEPTANCE TESTS FOR SEWER PIPELINES AND MANHOLES

- A. Infiltration Testing
 - 1. General
 - a. Maximum infiltration for each section of sewer pipe shall not exceed 25 gal/mile/day/ inch of pipe diameter.
 - b. Infiltration, exfiltration or air test may be used to prove compliance with infiltration requirement.
 - c. Acceptance of air test or exfiltration results will not preclude rejection of work if infiltration is measured and exceeds limitation.
 - d. Maximum infiltration for each manhole shall not exceed 1 gallon per vertical foot per 24 hours.
 - e. All tests to be witnessed by the appropriate Utility Authority.
 - 2. Air Test
 - a. Furnish all facilities required including:
 - (1) Necessary piping connections.
 - (2) Test pumping equipment.

- (3) Pressure gauges or manometers.
- (4) Bulkheads.
- (5) All miscellaneous items required.
- b. Obtain approval from Engineer of equipment and methods proposed for use.
- c. Test pipe in sections determined by Contractor and approved by Engineer.
- d. Plug ends of line and cap or plug all connections to withstand internal test pressures.
- e. Introduce low pressure air until internal air pressure is 4.0 psi greater than the average back pressure of ground water above the pipe. (Add 0.43 psi for each vertical foot of ground water over the top of pipe.)
- f. Allow two minutes for air pressure to stabilize.
- g. Time required for pressure to decrease from 3.5 to 2.5 psi greater than average back pressure of any ground water above pipe shall not be less than time in following table for given diameters.

Pipe Diameter	
(Inches)	Minutes
6	3.0
8	4.0
10	5.0
12	5.5
15	7.0
18	8.5
21	10.0
24	11.5
27	12.75
30	14.0
36	17.0

- h. Repeat test as necessary after all leaks and defects have been repaired.

B. Exfiltration Test

- 1. Furnish all facilities required to plug pipe sections and fill with water to attain a minimum elevation of water in upstream manhole two feet higher than top of pipe in line being tested, or two feet above existing ground water in trench, whichever is higher elevation.
- 2. Maintain water level in manhole at start of test period for one hour.
- 3. Water added to maintain level (water lost) shall not exceed the following amounts:
 - a. 8" pipe - 0.63 gallon per 100 feet.
 - b. 10" pipe - 0.79 gallon per 100 feet.
 - c. 12" pipe - 0.95 gallon per 100 feet.
 - c. 15" pipe - 1.19 gallon per 100 feet.

- d. 18" pipe - 1.42 gallon per 100 feet.
- e. 21" pipe - 1.66 gallon per 100 feet.
- f. 24" pipe - 1.90 gallon per 100 feet.

Allowable leakage may be increased by 5% for each foot of head above water elevation indicated above.

C. Infiltration Test

- 1. May be used in lieu of air test or exfiltration test if contractor can prove that ground water conditions are such that crown of pipe is covered with not less than two feet of water at highest point in section being tested. The test head shall be maintained for not less than 24 hours before a weir measurement is made.
- 2. Infiltration shall be measured with weir at manhole and shall not exceed amounts stated in paragraph B. 3., Exfiltration Test.
- 3. Engineer will require exfiltration or air test if contractor cannot prove to satisfaction of Engineer that ground water conditions are satisfactory.

END OF SECTION 02570

SECTION 02800

LANDSCAPING

PART 1 - GENERAL

1.1 REQUIREMENTS, CODES

- A. All applicable portions of Division One - General Requirements are to be considered as included with this section.
- B. All local landscape ordinances and codes shall be followed in the installation of the landscape portion of the project.
- C. Contractor shall provide means of temporary irrigation for all trees, shrubs and sod.

1.2 SCOPE OF WORK

The work shall consist of providing all material and labor to successfully install the landscape elements for the subject project.

1.3 OTHER RELATED DOCUMENTS

- A. Landscape Plans and Details.
- B. Sod Section 02485.

1.4 RELATED WORK UNDER OTHER CONTRACTS

- A. Site Work.

1.5 JOB CONDITIONS

- A. Examination of the Site and Plans:
 - 1. The Subcontractor acknowledges that he has examined the site, the plans and specifications. The submittal of a bid on this project is evidence that such examinations have been made.
 - 2. The Subcontractor shall examine the site and the plans to determine that the work can be done and that all dimensions are accurate. If there is a problem the Subcontractor shall notify the Architect.
 - 3. The Subcontractor shall carefully check the plans and specifications to determine that the listed plant materials are consistent with the drawings and vice versa. Should there be an inconsistency he shall notify the Architect.
 - 4. The Subcontractor shall verify the accuracy of all finish grades within the work area.
 - 5. The Subcontractor shall make every effort to safeguard the public during the landscape operations. This includes, but is not limited to, erecting barricades around excavation, close supervision of all work and placement of warning flags wherever necessary. Subcontractor shall insure that operations, equipment, and personnel involved in landscape operations do not pose a hazard to nor interfere with pedestrian or vehicular traffic.

6. The Landscape Subcontractor and General Contractor are responsible in full for providing insurance on all plant materials and other materials stored or installed. Said insurance shall cover all acts of God, theft, vandalism, and malicious mischief. If the Subcontractor elects to not provide insurance for the aforementioned acts he will in no way hold the Owner responsible for any losses he may incur prior to the final acceptance of the work by the Architect and the Owner.

1.6 CERTIFICATES OF INSPECTION

Certificates of Inspection as may be required by law for transportation of plant material shall accompany each invoice for each shipment of plants. Certificates shall be filed with the Architect prior to acceptance of the material. Inspection by State or Federal authorities at the place of growth does not preclude rejection of the material by the Architect.

1.7 MATERIALS STORAGE AND CLEAN UP

The Subcontractor shall establish and maintain a storage area for the materials he requires for the work. The property shall be kept as clean as possible at all times and the Subcontractor shall police up his work area prior to leaving the site each day.

1.8 COMPLETION AND ACCEPTANCE:

- A. The completion of the contract will be accepted and Notice of Completion recorded only when the entire contract is completed to the satisfaction of the Architect, Owner, and the Owner's Construction Representative.
- B. Within Ten (10) days notice by the Subcontractor of substantial completion the Architect shall inspect the property. He will either approve the work for the Owner's and Tenants' acceptance or will issue a "Punch List" of items to be completed or corrected.
- C. Final Acceptance of the work will be done as soon as the Subcontractor completes all "Punch List" items.

1.9 WARRANTY

- A. All plant material and installed landscape supplies shall be warranted for a period of one year after the final acceptance of the project.
- B. All replacement material shall meet or exceed the original specifications for the project as noted on the plans and within these specifications.

PART 2 – MATERIALS

2.1 SOIL

- ~~C.A.~~ Fill Dirt: Any fill dirt required to be brought on site to adequately prepare the existing grade to receive landscape materials shall be the responsibility of the landscape subcontractor.

2.2 PLANTS

- A. Specific requirements for the types of plants, size, and quantity are shown on the drawings. Species and variety as specified on the drawings and delivered to the site shall be certified as true to their genus, species, and variety.
- B. Plants shall be nursery grown, freshly dug, normally shaped and well branched. They shall be fully foliated when in leaf and shall have healthy, well developed root systems. The trees shall be self-supporting with straight trunks and with leaders intact. All plants furnished shall be free of disease and insect infestation and shall have been grown under climatic conditions similar to the project site for a minimum of one full season prior to use on the site. All plants shall be true to species and variety. Plants used where symmetry is required shall match as closely as possible. No substitution shall be permitted without permission of the Architect.
- ~~E.C.~~ Plants larger in size than those specified may be used with the approval of the Architect.
- ~~F.D.~~ Container grown plants that meet the specifications for the project may be used with the permission of the Architect.
- ~~G.E.~~ The Subcontractor may substitute plants with the approval of the Architect. The substitution of plants will only be allowed if the Subcontractor can show proof from at least 5 sources that the specified plants are unavailable. Substitutions will be made without an increase in the contract price.
- ~~H.F.~~ The sod shall be free of all weeds, insects, or disease. The sod shall have been machine cut. The sod shall be planted within 24 hours of cutting in the field. The pads shall be of uniform size and density.

2.3 SOIL ADDITIVES

Soil additives shall be from natural sources, air dried, and finely shredded and suitable for horticultural purposes. The pH value of all additives shall fall between 5.5 and 6.5 and shall contain no more than 35% moisture by weight.

2.4 MULCH

- A. Pinestraw shall be clean, fresh, and free of sticks, cones, branches, or soil.
- B. Pinestraw shall be delivered to the site in standard wire bales.

2.5 FERTILIZER

- A. Commercial fertilizer shall be a complete fertilizer; 50% of nitrogen of which is derived from natural organic sources or ureaform. Fertilizer shall be delivered to the site in standard size unopened containers which show the weight, chemical analysis, and manufacturer. It shall be stored in a dry location until its use. Fertilizer for trees, shrubs, and groundcover areas shall be a slow release type and shall be applied as follows:

<u>TREES AND SHRUBS</u>	<u>RATE OF APPLICATION</u>
March-May.....10-10-10	trees- 1 lb/inch of caliper
May-October....6-10-10	shrubs- .5 lb/inch of height
October-March...6-12-12	

2.6 STAKING MATERIAL

- A. Wood for stakes shall be sound uniform pieces of treated pine 2"x4"x4', pointed at one end. Stakes will remain unpainted after installation.
- B. Wire shall be #12 gauge annealed galvanized steel and shall be twisted into a double strand for use in guying.
- C. Hose shall be reinforced rubber or plastic garden hose ½" in diameter. Used hose is acceptable for staking operations.
- D. Turnbuckles shall be galvanized steel and have a 3" minimum opening fitted with screw eyes.

2.7 WATER

Water will be available at the site and will be supplied to the Subcontractor at no charge. If required, the transportation of water throughout the site will be the responsibility of the Subcontractor.

2.8 HERBICIDES

- A. Prior to planting any material, all shrub, tree, and groundcover beds shall be treated with a pre-emergent herbicide such as "Treflan" or approved equal. All applications shall be done in accordance with local, state, and federal requirements and the manufacturer's directions.
- B. "Roundup" may be used as a post emergent if necessary, but the Subcontractor shall be very careful to avoid chemical contact with the installed plant material. No new plant material may be installed within two weeks of roundup application.

2.9 TREE WOUND DRESSING

All trees wound dressing material will be a black asphalt based antiseptic paint.

PART 3 - EXECUTION

3.1 PLANT PREPARATION, HANDLING AND DIGGING

Plants shall be prepared for shipment in a manner that will prevent any damage to the branches, shape or future development of the plant.

- A. Plants shall be protected from drying out:
 - 1. Plants shall be handled so that roots, stems, and branches are adequately protected from drying at all times.
 - 2. Plants that cannot be planted immediately upon arrival on the site shall be kept in a shaded location and protected with straw mulch and wet down thoroughly twice a day. In no case shall a plant remain unplanted for more than 48 hours after its arrival on site.
- B. Digging: As many fibrous roots as possible shall be retained during the digging operations.

C. Balled Plants:

1. Plants designated as "B&B" shall be adequately balled with firm natural balls of soil in sizes as specified by the AMERICAN STANDARD FOR NURSERY STOCK.
2. Balls shall be firmly wrapped in burlap and securely tied with heavy twine or rope.
3. Plants with loose or broken balls will be rejected.
4. Balled and burlapped plants shall be lifted by the bottom only and not by the stems or trunks.

D. Groundcover Plants:

1. All groundcover beds shall be entirely cleaned of debris, stones, roots, and vegetation.
2. Subcontractor shall spread 25 lbs. of 6-12-12 fertilizer per 1000 s.f. of bed and 4" of the specified plant mix over the entire bed. This is to be tilled into the soil to a depth of 6" using an appropriate mechanical device.
3. Plants will be set to grade on the spacings shown on the plans and the entire bed shall be mulched with 3" of pinestraw.

3.2 PLANTING

A. Layout: Prior to planting any material the Subcontractor shall place the material on the site in accordance with the plans. Said layout shall be approved by the Architect prior to installation.

B. Obstructions: Should obstructions to the planting be encountered, such as rock outcrops, utilities, etc., the Subcontractor shall notify the Architect who shall direct the Subcontractor in an alternate placement of the material.

| D.C. Planting Operations: All planting operations shall be carried out by an experienced landscape crew under the supervision of an experienced landscape foreman. All plantings shall be accomplished in the manner shown on the construction details.

| E.D. Planting Trees and Shrubs:

1. Plant pits shall be excavated to produce vertical sides and flat bottoms. Sides and bottom shall be scarified.
2. Dimensions of the pits shall be as specified on the drawings.
3. A representative number of pits (1 every 100 s.f. of bed area) shall be checked for proper drainage by filling the pit with water and observing the rate of absorption. Should the pit not drain properly the Subcontractor shall notify the Architect and they will jointly arrive at a solution that will be presented to the Owner for his approval.
4. Setting Plants: Balled and burlapped plants shall be handled by the bottom and container plants shall be handled only by the can. No plant shall be moved by using the trunk or stem. The plants shall be set in relation to the surrounding grade in such a way as to be at least at the level at which they were grown in the nursery. They may be planted higher if drainage conditions warrant. All plants shall be backfilled with the specified plant mix and it shall be gently tamped in so that the finished planting results in a straight position for the plant.
5. Edging: Edging shall be by the use of a trench edge as shown on the plans.
6. Mulching: All plants will be mulched with 3" of pinestraw within 48 hours of planting.
7. Wrapping: All deciduous trees shall be wrapped as shown on the details within 48 hours of planting.
8. Guying: All trees will be guyed as shown on the drawings within 48 hours of planting.

3.3 WARRANTY

- A. The Subcontractor shall warranty all material for a period of one year after acceptance by the Owner.
- B. The Subcontractor shall begin maintenance of each landscape area as soon as it is completed.

END OF SECTION 02800

SECTION 02834

MODULAR CONCRETE RETAINING WALL

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Work shall consist of furnishing and construction of a KEYSTONE Retaining Wall System or equal in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.
- B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.
- C. Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawings.

1.2 RELATED SECTIONS

- A. Section 02200 – Earthwork

1.3 REFERENCE DOCUMENTS

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM C-1372 Specification for Segmental Retaining Wall Units
 - 2. ASTM D-422 Particle Size Analysis
 - 3. ASTM D-698 Laboratory Compaction Characteristics of Soil –Standard Effort
 - 4. ASTM D-4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils
 - 5. ASTM D-4595 Tensile Properties of Geotextiles - Wide Width Strip
 - 6. ASTM D-5262 Unconfined Tension Creep Behavior of Geosynthetics
 - 7. ASTM D-3034 Polyvinyl Chloride Pipe (PVC)
 - 8. ASTM D-1248 Corrugated Plastic Pipe
- B. Geosynthetic Research Institute (GRI)
 - 1. GRI-GG4 Determination of Long Tern Design Strength of Geogrids
 - 2. GRI-GG5 Determination of Geogrid (soil) Pullout
- C. National Concrete Masonry Association (NCMA)
 - 1. NCMA SRWU-1 Test Method for Determining Connection Strength of SRW
 - 2. NCMA SRWU-2 Test Method for Determining Shear Strength of SRW.

1.4 SUBMITTALS/CERTIFICATION

- A. Contractor shall submit a Manufacturer's certification, prior to start of work, that the retaining wall system components meet the requirements of this specification and the structure design.
- B. Contractor shall submit construction drawings and design calculations for the retaining wall system prepared and stamped by a Professional Engineer registered in the state of the project. The

engineering designs, techniques, and material evaluations shall be in accordance with the KEYSTONE Design Manual, NCMA Design Guidelines For Segmental Retaining Walls, or the AASHTO Standard Specifications for Highway Bridges, Section 5.8 (whichever is applicable to designer).

- C. Contractor shall submit a test report documenting strength of specific modular concrete unit and geogrid reinforcement connection. The maximum design tensile load of the geogrid shall be equal to the laboratory tested ultimate strength of geogrid / facing unit connection at a maximum normal force limited by the “Hinge Height” of the structure divided by a safety factor of 1.5. The connection strength evaluation shall be performed in accordance with NCMA test method SRWU-1.

1.5 QUALITY ASSURANCE

- A. Contractor shall submit certification, prior to start of work, that the retaining wall system (modular concrete units and specific geogrid):
 - 1. Has been successfully utilized on a minimum of five (5) similar projects, i.e., height, soil fill types, erection tolerances, etc.; and
 - 2. Has been successfully installed on a minimum of 1 million (1,000,000) square feet of retaining walls.
- B. Contractor shall submit a list of five (5) previously constructed projects of similar size and magnitude by the wall installer where the specific retaining wall system has been constructed successfully. Contact names and telephone numbers shall be listed for each project.
- C. Contractor shall provide evidence that the design engineer has a minimum of five years of documentable experience in the design for reinforced soil structures. The design engineer shall provide proof of current professional liability insurance with an aggregate coverage limit of not less than \$2,000,000.
- D. Owner shall provide soil testing and quality assurance inspection during earthwork and wall construction operations. Owner’s quality assurance program does not relieve the contractor of responsibility for wall performance.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification has been received.
- B. Contractor shall protect all materials from damage due to jobsite conditions and in accordance with manufacturer’s recommendations. Damaged materials shall not be incorporated into the work.

PART 2 – PRODUCTS

2.1 DEFINITIONS

- A. Modular Unit - a concrete retaining wall element machine made from portland cement, water, and aggregates.

- B. Structural Geogrid - a structural element formed by a regular network of integrally connected tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock, or earth and function primarily as reinforcement.
- C. Unit Drainage Fill - drainage aggregate which is placed within and immediately behind the modular concrete units.
- D. Reinforced Backfill - compacted soil which is placed within the reinforced soil volume as outlined on the plans.

2.2 MODULAR CONCRETE RETAINING WALL UNITS

- A. Modular concrete units shall conform to the following architectural requirements:
 - 1. Face color - standard manufacturers' color as be specified by the Architect.
 - 2. Face finish - sculptured rock face. Other face finishes will not be allowed without written approval of Architect.
 - 3. Bond configuration - running with bonds nominally located at midpoint vertically adjacent units, in both straight and curved alignments.
 - 4. Exposed surfaces of units shall be free of chips, cracks or other imperfections when viewed from a distance of 10 feet under diffused lighting.
- B. Modular concrete materials shall conform to the requirements of ASTM C1372 - Standard Specifications for Segmental Retaining Wall Units.
- C. Modular concrete units shall conform to the following structural and geometric requirements measured in accordance with appropriate references:
 - 1. Compressive strength = 3000 psi minimum;
 - 2. Absorption = 8 % maximum (6% in northern states) for standard weight aggregates;
 - 3. Dimensional tolerances = $\pm 1/8$ " from nominal unit dimensions not including rough split face, $\pm 1/16$ " unit height - top and bottom planes;
 - 4. Unit size - 8" (H) x 18" (W) x 18" (D) minimum;
 - 5. Unit weight - 100 lbs/unit minimum for standard weight aggregates;
 - 6. Inter-unit shear strength - 1500 plf minimum at 2 psi normal pressure;
 - 7. Geogrid/unit peak connection strength -1000 plf minimum at 2 psi normal force.
- D. Modular concrete units shall conform to the following constructability requirements:
 - 1. Vertical setback = $1/8$ " $\pm$ per course (near vertical) or 1" + per course per the design;
 - 2. Alignment and grid positioning mechanism - fiberglass pins, two per unit minimum;
 - 3. Maximum horizontal gap between erected units shall be - $1/2$ inch.

2.3 SHEAR CONNECTORS

- A. Shear connectors shall be $1/2$ inch diameter thermoset isophthalic polyester resin-pultruded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units. Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F.
- B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.

2.4 BASE LEVELING PAD MATERIAL

- A. Material shall consist of a compacted crushed stone base or non-reinforced concrete as shown on the construction drawings.

2.5 UNIT DRAINAGE FILL

- A. Unit drainage fill shall consist of clean 1" minus crushed stone or crushed gravel meeting the following gradation tested in accordance with ASTM D-422:

Sieve Size	Percent Passing
1 inch	100
3/4 inch	75-100
No. 4	0 – 10
No. 50	0 – 5

- B. One cubic foot, minimum, of drainage fill shall be used for each square foot of wall face. Drainage fill shall be placed within cores of, between, and behind units to meet this requirement.

2.6 REINFORCED BACKFILL

- A. Reinforced backfill shall be free of debris and meet the following gradation tested in accordance with ASTM D-422:

Sieve Size	Percent Passing
2 inch	100-75
3/4 inch	100-75
No. 40	0-60
No. 200	0-35

Plasticity Index (PI) <15 and Liquid Limit <40 per ASTM D-4318.

- B. The maximum aggregate size shall be limited to ¾ inch unless field tests have been performed to evaluate potential strength reductions to the geogrid design due to damage during construction.
- C. Material can be site excavated soils where the above requirements can be met. Unsuitable soils for backfill (high plastic clays or organic soils) shall not be used in the backfill or in the reinforced soil mass.
- D. Contractor shall submit reinforced fill sample and laboratory test results to the Architect/Engineer for approval prior to the use of any proposed reinforced fill material.

2.7 GEOGRID SOIL REINFORCEMENT

- A. Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil reinforcement applications and shall be manufactured from high tenacity polyester yarn or high density polyethylene. Polyester geogrid shall be knitted from high tenacity polyester filament yarn with a molecular weight exceeding 25,000 Meg/m and a carboxyl end group values less than 30. Polyester geogrid shall be coated with an impregnated PVC coating that resists peeling, cracking, and stripping.

- B. Ta, Long Term Allowable Tensile Design Load, of the geogrid material shall be determined as follows:
 $Ta = Tult / (RFcr * RFd * RFid * FS)$
Ta shall be evaluated based on a 75 year design life.
1. Tult, Short Term Ultimate Tensile Strength
Tult is based on the minimum average roll values (MARV)
 2. RFcr, Reduction Factor for Long Term Tension Creep
RFcr shall be determined from 10,000 hour creep testing performed in accordance with ASTM D5262. Reduction value = 1.60 minimum.
 3. RFd, Reduction Factor for Durability
RFd shall be determined from polymer specific durability testing covering the range of expected soil environments. RFd = 1.10 minimum.
 4. RFid, Reduction Factor for Installation Damage
RFid shall be determined from product specific construction damage testing performed in accordance with GRI-GG4. Test results shall be provided for each product to be used with project specific or more severe soil type. RFid = 1.10 minimum.
 5. FS, Overall Design Factor of Safety
FS shall be 1.5 unless otherwise noted for the maximum allowable working stress calculation.
- C. The maximum design tensile load of the geogrid shall not exceed the laboratory tested ultimate strength of the geogrid/facing unit connection as limited by the "Hinge Height" divided by a factor of safety of 1.5. The connection strength testing and computation procedures shall be in accordance with NCMA SRWU-1 Test Method for Determining Connection Strength of SRW.
- D. Soil Interaction Coefficient, Ci Ci values shall be determined per GRI:GG5 at a maximum 0.75 inch displacement.
- E. Manufacturing Quality Control The geogrid manufacturer shall have a manufacturing quality control program that includes QC testing by an independent laboratory.
The QC testing shall include:
Tensile Strength Testing
Melt Flow Index (HDPE)
Molecular Weight (Polyester).

2.8 DRAINAGE PIPE

- A. If required, the drainage pipe shall be perforated or slotted PVC pipe manufactured in accordance with ASTM D-3034 or corrugated HDPE pipe manufactured in accordance with ASTM D-1248.

PART 3 – EXECUTION

3.1 EXCAVATION

- A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall inspect the excavation and approve prior to placement of leveling material or fill soils. Proof roll foundation area as directed to determine if remedial work is required.

- B. Over-excavation and replacement of unsuitable foundation soils and replacement with approved compacted fill will be compensated as agreed upon with the Owner.

3.2 BASE LEVELING PAD

- A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches and extend laterally a minimum of 6" in front and behind the modular wall unit.
- B. Soil leveling pad materials shall be compacted to a minimum of 95 % Standard Proctor density per ASTM D-698.
- C. Leveling pad shall be prepared to insure full contact to the base surface of the concrete units.

3.3 MODULAR UNIT INSTALLATION

- A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in full contact with the base and properly seated.
- B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.
- C. Install shear/connecting devices per manufacturer's recommendations.
- D. Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill. Follow wall erection and drainage fill closely with structure backfill.
- E. Maximum stacked vertical height of wall units, prior to unit drainage fill and backfill placement and compaction, shall not exceed two courses.

3.4 STRUCTURAL GEOGRID INSTALLATION

- A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.
- B. Geogrid reinforcement shall be placed at the strengths, lengths, and elevations shown on the construction design drawings or as directed by the Engineer.
- C. The geogrid shall be laid horizontally on compacted backfill and attached to the modular wall units. Place the next course of modular concrete units over the geogrid. The geogrid shall be pulled taut, and anchored prior to backfill placement on the geogrid.
- D. Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.

3.5 REINFORCED BACKFILL PLACEMENT

- A. Reinforced backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geogrid and installation damage.

- B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 - 10 inches where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.
- C. Reinforced backfill shall be compacted to 95% of the maximum density as determined by ASTM D698. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be dry of optimum, + 0%, - 3%.
- D. Only lightweight hand-operated equipment shall be allowed within 3 feet from the tail of the modular concrete unit.
- E. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.
- F. Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning shall be avoided.
- G. At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

3.6 CAP INSTALLATION

- A. Cap units shall be glued to underlying units with an all-weather adhesive recommended by the manufacturer.

3.7 AS-BUILT CONSTRUCTION TOLERANCES

- A. Vertical alignment : $\pm 1.5''$ over any 10' distance.
- B. Wall Batter: within 2 degrees of design batter.
- C. Horizontal alignment: $\pm 1.5''$ over any 10' distance. Corners, bends, curves ± 1 ft to theoretical location.
- D. Maximum horizontal gap between erected units shall be $\frac{1}{2}$ inch.

3.8 FIELD QUALITY CONTROL

- A. The Contractor shall engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction. This does not relieve the Contractor from securing the necessary construction control testing during construction.
- B. Testing and inspections services shall only be performed by qualified and experienced technicians and engineers.

- C. As a minimum, quality assurance testing should include foundation soil inspection, soil and backfill testing, verification of design parameters, and observation of construction for general compliance with design drawings and specifications.

END OF SECTION 02834

SECTION 02871 BICYCLE RACKS

PART 1 - GENERAL

SCHEDULE 0 - SECTION INCLUDES

PRODUCT DATA SHEET 0 - Bicycle storage racks.

SCHEDULE 1 - REFERENCES

PRODUCT DATA SHEET 0 - American Society for Testing and Materials ASTM A 513 - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing.

PRODUCT DATA SHEET 1 - American Society for Testing and Materials ASTM A 500B - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

SCHEDULE 2 - SUBMITTALS

PRODUCT DATA SHEET 0 - Submit under provisions of Section 01300.

PRODUCT DATA SHEET 1 - Product Data : Manufacturer's data sheets on each product to be used, including:

- 1.1 Preparation instructions and recommendations.
- 1.2 Storage and handling requirements and recommendations.

PRODUCT DATA SHEET 2 - Shop Drawings: Manufacturing details for each bicycle rack.

PRODUCT DATA SHEET 3 - Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

SCHEDULE 3 - QUALITY ASSURANCE

PRODUCT DATA SHEET 0 - Manufacturer Qualifications:

- 1.1 A firm experienced in manufacturing bicycle racks similar to those required for this project and with a record of successful in-service performance.

PRODUCT DATA SHEET 1 - Installer Qualifications:

- 1.1 An experienced installer who has completed installation of bicycle racks similar in material, design, and extent to that indicated for this project and whose work has resulted in construction with a record of successful in-service performance.

PRODUCT DATA SHEET 2 - Source Limitations: Obtain each color, finish, shape and type of bicycle rack from a single source with resources to provide components of consistent quality in appearance and physical properties.

SCHEDULE 4 - DELIVERY, STORAGE, AND HANDLING

PRODUCT DATA SHEET 0 - Store products in manufacturer's unopened packaging until ready for installation.

SCHEDULE 5 - PROJECT CONDITIONS

PRODUCT DATA SHEET 0 - Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

SCHEDULE 0 - MANUFACTURERS

PRODUCT DATA SHEET 0 - Basis of design: Saris Cycling Group, which is located at: 5253 Verona Rd. ; Madison, WI 53711; Toll Free Tel: 800-783-7257; Tel: 608-274-6550; Fax: 608-274-1702; web: www.sarisparking.com

PRODUCT DATA SHEET 1 - Requests for substitutions will be considered in accordance with provisions of Section 01600.

SCHEDULE 1 - BICYCLE WAVE RACKS

PRODUCT DATA SHEET 0 - Bicycle Wave Racks, 6800 Series:

- 2.1 Construction: 1-5/8 inches (41 mm) O.D. 12 gauge (0.109 inches) (2.65 mm) steel tube.
- 2.2 Capacity: 10 bikes (2 required – total capacity 20 bikes)
- 2.3 Mount: Standard leg.
- 2.4 Finish: Polyester powder coat.
- 2.5 Colors:
 - A. Safety Yellow.

SCHEDULE 2 - MATERIALS

PRODUCT DATA SHEET 0 - Steel Tube: ASTM A 513, electric welded steel tubing.

PRODUCT DATA SHEET 1 - Steel Pipe: ASTM A 500B steel pipe.

SCHEDULE 3 - FINISH

PRODUCT DATA SHEET 0 - Manufacturer's standard factory-applied polyester paint finishes using a powder coating heat-cured system. Color as approved.

PART 3 - EXECUTION

SCHEDULE 0 - EXAMINATION

PRODUCT DATA SHEET 0 - Do not begin installation until substrates have been properly prepared.

PRODUCT DATA SHEET 1 - If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

SCHEDULE 1 - INSTALLATION

PRODUCT DATA SHEET 0 - Install in accordance with manufacturer's instructions.

SCHEDULE 2 - PROTECTION

PRODUCT DATA SHEET 0 - Protect installed products until completion of project.

PRODUCT DATA SHEET 1 - Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. Related Sections:
 - 1. Section 02300 "Earthwork" for drainage fill under slabs-on-grade.
 - 2. Section 3 specifications related to concrete finishing.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. LEED Submittals:
 - 1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
 - 2. Product Data for Credit IEQ 4.3: For curing and sealing compounds, documentation including printed statement of VOC content.
 - 3. Design Mixtures for Credit ID 1.1: For each concrete mixture containing fly ash as a replacement for portland cement or other portland cement replacements, and for equivalent concrete mixtures that do not contain portland cement replacements.
- C. Design Mixtures: For each concrete mixture.
- D. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement.

1.3 INFORMATIONAL SUBMITTALS

- A. Material certificates.
- B. Material test reports.
- C. Floor surface flatness and levelness measurements.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
- C. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- D. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- E. Preinstallation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

2.2 STEEL REINFORCEMENT

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 60 percent.
- B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- C. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.
- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - 1. Portland Cement: ASTM C 150, Type I/II, gray. Supplement with the following:
 - a. Fly Ash: ASTM C 618, Class F or C.
 - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Normal-Weight Aggregates: ASTM C 33, graded.
 - 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M and potable.

2.4 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.5 FIBER REINFORCEMENT

- A. GC may submit fiber reinforcement as an alternate to wire reinforcing in concrete slabs.
- B. Synthetic Micro-Fiber: Monofilament or fibrillated polypropylene micro-fibers engineered and designed for use in concrete, complying with ASTM C 1116/C 1116M, Type III, 1 to 2-1/4 inches long.

2.6 VAPOR RETARDERS

- A. Sheet Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 10 mils thick.

2.7 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete. Evaporation retarder temporarily reduces moisture loss from concrete surfaces awaiting finishing in hot, dry, and windy conditions. Evaporation retarders are not curing compounds.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.

Retain first paragraph below if a dissipating-type, waterborne, membrane-forming curing compound is required.

Retain first paragraph below if a nondissipating-type, waterborne, membrane-forming curing compound with minimal solids content is required. Retain option if applicable.

- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, **certified by curing compound manufacturer to not interfere with concrete stain.**

Retain first paragraph below if a clear, nonyellowing, solvent-borne, membrane-forming curing and sealing compound is required.

Retain "VOC Content" Subparagraph below if required for LEED-NC, LEED-CI, or LEED-CS Credit IEQ 4.3.

1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

Retain paragraph below if a clear, nonyellowing, waterborne, membrane-forming curing and sealing compound is required.

2.8 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

2.9 CONCRETE MIXTURES

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
- B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.

- C. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
- D. Proportion normal-weight concrete mixture as follows:
 - 1. Minimum Compressive Strength: 3000 psi at 28 days.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.50.
 - 3. Slump Limit:
 - a. 4 inches for concrete, plus or minus 1 inch.
 - b. 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
 - 4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch nominal maximum aggregate size.
 - 5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
 - 6. Synthetic Micro-Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.5 lb/cu. yd..

2.10 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.11 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

- C. Chamfer exterior corners and edges of permanently exposed concrete.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 VAPOR RETARDERS

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.
 - 1. Lap joints 6 inches and seal with manufacturer's recommended tape.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
- E. Waterstops: Install in construction joints and at other joints indicated according to manufacturer's written instructions.

3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - 1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- C. Cold-Weather Placement: Comply with ACI 306.1.
- D. Hot-Weather Placement: Comply with ACI 301.

3.7 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces to receive a rubbed finish, to be covered with a coating or covering material applied directly to concrete.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where exposed to public view:
 - 1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
 - 2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
 - 3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.
 - 1. Apply scratch finish to surfaces indicated and to receive concrete floor toppings and to receive mortar setting beds for bonded cementitious floor finishes.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
 - 1. Apply float finish to surfaces indicated to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - 1. Apply a trowel finish to surfaces indicated exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
 - 2. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 3/16 inch.
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.
 - 1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

3.9 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.
 - b. Confirm that curing compound will not adversely affect concrete stain,

3.10 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

3.11 FIELD QUALITY CONTROL

- A. Testing: Contractor will engage a qualified testing agency to perform field tests and prepare test reports.
- B. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
 - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 - 2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

- a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 3. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 4. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 5. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
 6. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
 7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
 8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
 9. Test results shall be reported in writing to Structural Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
 10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
 11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
 12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
 13. Correct deficiencies in the Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Inspecting: Concrete work is subject to special inspection in accordance with project special inspection plan. Allow inspectors access to scaffolding and work areas, as needed to perform inspections.

1. Place concrete only after inspectors have verified compliance with construction drawings and specs.

END OF SECTION 03300

SECTION 03350 - CONCRETE FINISHING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Finishing concrete slabs and formed surfaces.
 - 2. Floor sealer.
 - 3. Stained concrete finish.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section 03300 - Cast-In-Place Concrete.

1.2 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. 301 - Structural Concrete for Buildings.
 - 2. 302.1 - Guide for Concrete Floor and Slab Construction.
- B. ASTM International (ASTM):
 - 1. C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - 2. E1155 - Standard Test Method for Determining Floor Flatness and Levelness Using the F-Number System (Inch-Pound Units).

1.3 DEFINITIONS

- A. Specified Overall Value (SOV): Describes the flatness or levelness value which must be achieved when all measured values of that type on a given Test Surface are combined.
- B. Minimum Local Value (MLV): Describes the flatness or levelness value below which repair or replacement is required and applies to Minimum Local Area.
- C. Minimum Local Area (MLA): An area bounded by construction or contraction joints or by column lines or half-column lines, whichever is smaller; no boundary crosses a construction joint or expansion joint.
- D. Level: Horizontal, normal to the direction of gravity. An envelope is defined by 2 level lines which are separated by stated distances.

1.4 SUBMITTALS

- A. Submittals for Review:
 - 1. Product Data: Descriptive data for concrete stain.
 - 2. Samples: 12 x 12 inch stained samples showing gradation and color range.
- B. Sustainable Design Submittals:
 - 1. Resource Reuse.
 - 2. Regional Materials.

3. Low-Emitting Materials.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 3 years experience in work of this Section.
- B. Concrete Mix Design: Free from admixtures and additives not specifically approved by stain manufacturer.
- C. Mockup:
 - 1. Size: 4 x 8 feet.
 - 2. Show: Stained concrete finish, joint pattern, and joint profile.
 - 3. Locate where directed.
 - 4. Approved mockup may remain as part of the Work.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers - Concrete Stains:
 - 1. H and C Concrete Stains. (www.hc-concrete.com)
 - 2. Kemiko Concrete Stains. (www.kemiko.com)
 - 3. L.M. Scofield Co., Inc. (www.scofield.com)
- B. Acceptable Manufacturers - Concrete Sealers:
 - 1. BASF Admixtures, Inc. (www.chemrex.com)
 - 2. Conspec Marketing and Manufacturing. (www.conspecmkt.com)
 - 3. Dayton/Richmond. (www.daytonrichmond.com)
 - 4. W. R. Meadows, Inc. (www.wrmeadows.com)
 - 5. Nox-Crete Products Group. (www.nox-crete.com)
 - 6.
- C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Concrete Materials: Specified in Section 03300.
- B. Concrete Stain:
 - 1. Color to be selected from manufacturer's standards.
 - 2. Maximum Volatile Organic Compound (VOC) Content: 100 grams per liter.
- C. Colored Curing Compound:
 - 1. Type recommended by stain manufacturer, colored to match.
 - 2. Maximum Volatile Organic Compound (VOC) Content: 100 grams per liter.
- D. Floor Sealer:
 - 1. Type: ASTM C309, water based, acrylic copolymer resin.
 - 2. Maximum Volatile Organic Compound (VOC) Content: 50 grams per liter.

2.3 MIXES

- A. Patching Mortar:
 - 1. Use same proportions as concrete except omit coarse aggregate.
 - 2. Add minimum water required for handling and placing.
- B. Mortar Slurry: 1 part portland cement and 1-1/2 part damp, loose sand, by volume.

PART 3 EXECUTION

3.1 FINISHING FORMED SURFACES

- A. Concealed Surfaces: Leave texture imparted by forms.
- B. Exposed Surfaces:
 - 1. While concrete is still green, patch voids over 1/2 inch in diameter or depth.
 - 2. Chip away defective concrete; form edges perpendicular to surface. Wet area to be patched with clean water.
 - 3. Apply bonding agent in accordance with manufacturer's instructions.
 - 4. Press mortar into place; strike off slightly higher than surrounding surface. Allow initial shrinkage to occur before finishing.
 - 5. Finish to match texture and color of adjacent surfaces.
 - 6. Remove fins and other protrusions by rubbing with carborundum stone while concrete is still green.
 - 7. After patching and while concrete is still green, spread mortar slurry over dampened surface.
 - 8. Apply using burlap pads or sponge rubber floats. Remove surplus material, then rub with clean burlap.
 - 9. Keep surfaces damp for 7 days minimum.

3.2 FINISHING INTERIOR FLOOR SURFACES

- A. Finish concrete floor surfaces in accordance with ACI 301 and ACI 302.1.
- B. Steel trowel and stain surfaces where scheduled.
 - 1. Apply stain in accordance with manufacturer's instructions, to uniform coverage.
 - 2. Work stain into surface voids.
 - 3. Prevent overlaps, application patterns, and streaks.
 - 4. Apply color curing compound in accordance with manufacturer's instructions, to uniform coverage.
- C. In areas with floor drains, maintain design floor elevation at walls; slope surfaces uniformly to drains at 1/8 inch per foot.
- D. Tolerances:

**** OR ****

E. Tolerances:

1. Maximum variation of surface flatness for exposed concrete floors: 1/8 inch in 10 feet.
2. Maximum variation of surface flatness under resilient flooring or carpeting: 1/4 inch in 10 feet.
3. Correct defects by grinding or removal and replacement of defective work. Re-measure corrected areas by same process.

END OF SECTION

SECTION 04810 - UNIT MASONRY ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes unit masonry assemblies consisting of the following:
 - 1. Concrete masonry units (CMUs).
 - 2. Decorative concrete masonry units.
 - 3. Face brick.
- B. See Division 5 Section "Metal Fabrications" for furnishing steel **lintels and shelf angles** for unit masonry.
- C. See Division 1 Section "Allowances" for face brick sole-source information.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. LEED Submittals:
 - 1. Product Certificates for Credit MR 5.1 **and Credit MR 5.2**: For products and materials required to comply with requirements for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
- C.
- D. Samples for each type and color of **exposed masonry units and colored mortars**.
- E. Material Certificates: For each type of product indicated. Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards.
 - 1. For masonry units include material test reports substantiating compliance with requirements.
- F. Mix Designs: For each type of mortar **and grout**. Include description of type and proportions of ingredients.

1.3 QUALITY ASSURANCE

- A. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

1.4 PROJECT CONDITIONS

- A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in **ACI 530.1/ASCE 6/TMS 602**.
- B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
 - 2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 COLORS, TEXTURES, AND PATTERNS

- A. Exposed Masonry Units: **As selected from manufacturer's full range of "Standard" colors.**

2.3 CONCRETE MASONRY UNITS (CMUs)

- A. Shapes: Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
- B. Regional Materials: Provide CMUs that have been manufactured within **500 miles (800 km)** of Project site from aggregates **and cement** that have been extracted, harvested, or recovered, as well as manufactured, within **500 miles (800 km)** of Project site.
- C. Integral Water Repellent: Provide units made with liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength **for exposed units.**

1. **Available** Products:

- a. Addiment Incorporated; Block Plus W-10.
- b. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Dry-Block.
- c. Master Builders, Inc.; Rheopel.

D. Concrete Masonry Units: **ASTM C 90**.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of **1900 psi**.
2. Weight Classification: **lightweight**.
3. Pattern and Texture for Decorative Units:
 - a. Standard pattern, smooth finish (integral color).
 - b. Standard pattern, split-face finish (integral color).

2.4 **CONCRETE AND MASONRY LINTELS**

- A. As shown on drawings.
- B. Contractor may submit precast lintels as an alternate for review and approval by Engineer.

2.5 **BRICK**

- A. General: Provide shapes indicated and as follows:
 1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
 2. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
- B. Face Brick: **ASTM C 216**.
 1. Size (Actual Dimensions **3-5/8 inches (92 mm) wide by 2-1/4 inches (57 mm) high by 7-5/8 inches (194 mm) long**).
 2. Product: "Heritage Velour" by Carolina Ceramics **NO SUBSTITUTIONS**

2.6 **MORTAR AND GROUT MATERIALS**

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

1. Products:
 - a. Holcim (US) Inc.; **Mortamix Masonry Cement**
 - b. Lafarge North America Inc.; **Lafarge Masonry Cement**
 - c. Lehigh Cement Company; **Lehigh Masonry Cement** .
 - D. Colored Cement Product: Packaged blend made from **masonry cement** and mortar pigments, all complying with specified requirements, and containing no other ingredients.
 1. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.
 2. Products:
 - a. Colored Masonry Cement:
 - 1) Lafarge North America Inc.; **Florida Custom Color Masonry**. Color: "Burnt Orange"
 - E. Aggregate for Mortar: ASTM C 144.
 1. For joints less than **1/4 inch (6.5 mm)** thick, use aggregate graded with 100 percent passing the **No. 16 (1.18-mm)** sieve.
 2. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
 - F. Aggregate for Grout: ASTM C 404.
 - G. Water: Potable.
- 2.7 REINFORCEMENT
- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, **Grade 60 (Grade 420)**.
 - B. Masonry Joint Reinforcement: **ASTM A 951**; mill galvanized, carbon-steel wire for interior walls and hot-dip galvanized, carbon-steel wire for exterior walls.
 1. Wire Size for Side Rods: **W2.8 or 0.188-inch (4.8-mm)** diameter.
 2. Wire Size for Cross Rods: **W2.8 or 0.188-inch (4.8-mm)** diameter.
 3. Wire Size for Veneer Ties: **W2.8 or 0.188-inch (4.8-mm)** diameter.
 4. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than **16 inches (407 mm)** o.c.
 5. Single-Wythe Masonry: Either ladder or truss type with single pair of side rods.
 6. Multiwythe Masonry:
 - a. Ladder type with 1 side rod at each face shell of hollow masonry units more than **4 inches (100 mm)** in width, plus 1 side rod at each wythe of masonry **4 inches (100 mm)** or less in width.
 - b. Adjustable (two-piece) type, with one side rod at each face shell of backing wythe and with ties that extend into facing wythe. Ties engage eyes or

slots in reinforcement and extend at least halfway through facing wythe but with at least **5/8-inch (16-mm)** cover on outside face.

2.8 TIES AND ANCHORS

A. Materials:

1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153/A 153M, Class B-2 coating.
2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, hot-dip galvanized after fabrication to comply with ASTM A 153/A 153M.

B. Adjustable Anchors for Connecting to Structure: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Tie Section: Triangular-shaped wire tie, sized to extend within **1 inch (25 mm)** of masonry face, made from **0.25-inch- (6.4-mm-)** diameter, hot-dip galvanized steel wire.
2. Connector Section for Concrete: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from **0.097-inch- (2.5-mm-)** thick, steel sheet, galvanized after fabrication.

C. Partition Top anchors: **0.097-inch- (2.5-mm-)** thick metal plate with **3/8-inch- (10-mm-)** diameter metal rod **6 inches (150 mm)** long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.

1. Corrosion Protection: **Hot-dip galvanized to comply with ASTM A 153/A 153M.**

D. Adjustable Masonry-Veneer Anchors

1. General: Provide anchors that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, and as follows:
 - a. Structural Performance Characteristics: Capable of withstanding a **100-lbf (445-N)** load in both tension and compression without deforming or developing play in excess of **0.05 inch (1.3 mm)**.
2. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie and a metal anchor section.
 - a. Anchor Section: Rib-stiffened, sheet metal plate with screw holes top and bottom, and slotted holes for inserting wire tie.
 - b. Fabricate sheet metal anchor sections from **0.097-inch- (2.5-mm-)** thick, steel sheet, galvanized after fabrication.
 - c. Wire Ties: Triangular-, rectangular-, or T-shaped wire ties fabricated from **0.25-inch- (6.4-mm-)** diameter, hot-dip galvanized steel wire.
 - d. Products:

- 1) Dayton Superior Corporation, Dur-O-Wal Division;
- 2) Heckmann Building Products Inc.; 315-D with 316.
- 3) Hohmann & Barnard, Inc.; **DW-10HS**.

2.9 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing: Provide metal flashing, where flashing is exposed or partly exposed and where indicated, complying with Division 7 Section "Sheet Metal Flashing and Trim."
- B. Flexible Flashing: For flashing not exposed to the exterior, use the following, unless otherwise indicated:
1. Copper-Laminated Flashing: **5-oz./sq. ft. (1.5-kg/sq. m)** copper sheet bonded with asphalt between 2 layers of glass-fiber cloth.
 - a. Products:
 - 1) Advanced Building Products Inc.; Copper Fabric Flashing.
 - 2) AFCO Products Inc.; Copper Fabric.
 - 3) Hohmann & Barnard, Inc.; H & B C-Fab Flashing.
 - 4) Phoenix Building Products; Type FCC-Fabric Covered Copper.
 - 5) Polytite Manufacturing Corp.; Copper Fabric Flashing.
 - 6) Sandell Manufacturing Co., Inc.; Copper Fabric Flashing.
 - 7) York Manufacturing, Inc.; York Copper Fabric Flashing.
 2. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than **0.040 inch (1.0 mm)**.
 - a. Products:
 - 1) Advanced Building Products Inc.; Peel-N-Seal.
 - 2) Carlisle Coatings & Waterproofing; CCW-705-TWF Thru-Wall Flashing.
 - 3) Dayton Superior Corporation, Dur-O-Wal Division; Dur-O-Barrier-44.
 - 4) Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Perm-A-Barrier Wall Flashing.
 - 5) Heckmann Building Products Inc.; No. 82 Rubberized-Asphalt Thru-Wall Flashing.
 - 6) Hohmann & Barnard, Inc.; Textroflash.
 - 7) Polyguard Products, Inc.; Polyguard 300.
 - 8) Polytite Manufacturing Corp.; Poly-Barrier Self-Adhering Wall Flashing.
- C. Solder and Sealants for Sheet Metal Flashings: As specified in Division 7 Section "Sheet Metal Flashing and Trim."

- D. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer.

2.10 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; formulated from **neoprene**.
- B. Preformed Control-Joint Gaskets: Made from **styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 or [PVC, complying with ASTM D 2287, Type PVC-65406** and designed to fit standard sash block and to maintain lateral stability in masonry wall.
- C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
- D. Weep/Vent Products: Use the following, unless otherwise indicated:
 - 1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth **1/8 inch (3 mm)** less than depth of outer wythe, in color selected from manufacturer's standard.
 - a. Products:
 - 1) Advanced Building Products Inc.; Mortar Maze weep vent.
 - 2) Dayton Superior Corporation, Dur-O-Wal Division; Cell Vents.
 - 3) Heckmann Building Products Inc.; No. 85 Cell Vent.
 - 4) Hohmann & Barnard, Inc.; Quadro-Vent.
- E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
 - 1. Provide one of the following configurations:
 - a. Strips, full-depth of cavity and **10 inches (250 mm)** wide, with dovetail shaped notches **7 inches (175 mm)** deep.

2.11 INSULATION

- A. Polyisocyanurate Board Insulation: ASTM C 1289, Class 2 (glass-fiber-reinforced).

2.12 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains from new masonry without damaging masonry. Use product approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

1. Manufacturers:
 - a. Diedrich Technologies, Inc.
 - b. EaCo Chem, Inc.
 - c. ProSoCo, Inc.

2.13 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, unless otherwise indicated.
 1. Do not use calcium chloride in mortar or grout.
 2. Limit cementitious materials in mortar for exterior[**and reinforced**] masonry to portland cement and lime.
 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Mortar for Unit Masonry: Comply with **ASTM C 270, BIA Technical Notes 8A** , Proportion Specification.
 1. For masonry below grade or in contact with earth, use Type **M**.
 2. For reinforced masonry, use Type **S or Type M**.
 3. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type S or Type M..
 4. Type N mortar may be used for brick only.
- C. Pigmented Mortar: Use colored cement product.
 1. Pigments shall not exceed 10 percent of portland cement by weight.
 2. Pigments shall not exceed 5 percent of masonry cement by weight.
- D. Grout for Unit Masonry: Comply with **ASTM C 476**.
 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with **Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602** for dimensions of grout spaces and pour height.
 2. Provide grout with a slump of **8 to 11 inches (200 to 280 mm)** as measured according to ASTM C 143/C 143M.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Use full-size units without cutting if possible. If cutting is required, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying

unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

- B. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
- C. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds **30 g/30 sq. in. (30 g/194 sq. cm)** per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.
- D. Comply with tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:
 - 1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than **1/8 inch in 10 feet (3 mm in 3 m)**, **1/4 inch in 20 feet (6 mm in 6 m)**, or **1/2 inch (12 mm)** maximum.
 - 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than **1/8 inch in 10 feet (3 mm in 3 m)**, **1/4 inch in 20 feet (6 mm in 6 m)**, or **1/2 inch (12 mm)** maximum.

3.2 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal **4-inch (100-mm)** horizontal face dimensions at corners or jambs.
- C. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- D. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.
- E. Fill cores in hollow concrete masonry units with grout **24 inches (600 mm)** under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.

3.3 MORTAR BEDDING AND JOINTING

- A. Lay hollow **concrete masonry units** as follows:
 - 1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
 - 2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
 - 3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.

4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint), unless otherwise indicated.

3.4 CAVITY WALLS

- A. Bond wythes of cavity walls together using one of the following methods:
 1. Masonry Joint Reinforcement: Installed in horizontal mortar joints.
 - a. Where bed joints of both wythes align, use **ladder-type reinforcement extending across both wythes**.
 - b. Where bed joints of wythes do not align or where new face brick is installed at existing CMU walls, use adjustable (two-piece) type reinforcement.
 2. Masonry Veneer Anchors: Comply with requirements for anchoring masonry veneers.
- B. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.
- C. Coat cavity face of backup wythe to comply with Division 7 Section "Fluid Applied Air Barriers."
- D. Installing Cavity-Wall Insulation: Place small dabs of adhesive, spaced approximately **12 inches (300 mm)** o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit insulation between wall ties and other confining obstructions, with edges butted tightly. Press units firmly against inside wythe of masonry.

3.5 MASONRY-CELL INSULATION

- A. Install spray foam (core fill) into cavities to fill void spaces. Maintain inspection ports to show presence of insulation at extremities of each pour area. Close the ports after filling has been confirmed. Insulation equal to "Core Fill 500".

3.6 MASONRY JOINT REINFORCEMENT

- A. General: Install in mortar with a minimum cover of **5/8 inch (16 mm)** on exterior side of walls, **1/2 inch (13 mm)** elsewhere. Lap reinforcement a minimum of **6 inches (150 mm)**.
- B. Interrupt joint reinforcement at expansion joints, unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.

3.7 ANCHORING MASONRY TO STRUCTURAL MEMBERS

- A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
 - 1. Provide an open space not less than 1/2 inch in width between masonry and structural member, unless otherwise indicated.
 - 2. Anchor masonry to structural members with anchors embedded in masonry joints and attached to structure.
 - 3. Space anchors as indicated, but not more than **24 inches (610 mm)** o.c. vertically and **36 inches (915 mm)** o.c. horizontally unless specifically noted otherwise on drawings.

3.8 ANCHORING MASONRY VENEERS

- A. Anchor masonry veneers to **concrete and masonry backup** with masonry-veneer anchors to comply with the following requirements:
 - 1. Fasten **screw-attached** anchors **to concrete and masonry backup** with metal fasteners of type indicated. Use two fasteners.
 - 2. Embed **tie sections** in masonry joints. Provide not less than **2 inches (50 mm)** of air space between back of masonry veneer and face of masonry back-up.
 - 3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
 - 4. Space anchors as indicated, but not more than **16 inches (406 mm)** o.c. vertically and **16 inches (406 mm)** o.c. horizontally. Install additional anchors within **12 inches (305 mm)** of openings and at intervals, not exceeding **16 inches (406 mm)**, around perimeter.

3.9 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. **Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.**

- B. Install flashing as follows, unless otherwise indicated:
1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing as recommended by flashing manufacturer.
 2. At lintels and shelf angles, extend flashing a minimum of **6 inches (150 mm)** into masonry at each end. At heads and sills, extend flashing **6 inches (150 mm)** at ends and turn up not less than **2 inches (50 mm)** to form end dams.
 3. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing **1/2 inch (13 mm)** back from outside face of wall and adhere flexible flashing to top of metal flashing termination.
- C. Install weep holes in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:
1. Use **specified weep/vent products** to form weep holes.
 2. Space weep holes **24 inches (600 mm)** o.c., unless otherwise indicated.
- D. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in Part 2 "Miscellaneous Masonry Accessories" Article.
- E. Install vents in head joints in exterior wythes at spacing indicated. Use **specified weep/vent products** to form vents.
1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

3.10 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in **ACI 530.1/ASCE 6/TMS 602**.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
1. Comply with requirements in **ACI 530.1/ASCE 6/TMS 602** for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 2. Limit height of vertical grout pours to not more than 60 inches.

3.11 FIELD QUALITY CONTROL

- A. Inspectors: Masonry work is subject to special inspection in accordance with project special inspection plan. Allow inspectors access to scaffolding and work areas, as needed to perform inspections.
 - 1. Place grout only after inspectors have verified compliance of grout spaces and grades, sizes, and locations of reinforcement.

3.12 CLEANING

- A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
 - 2. Protect adjacent surfaces from contact with cleaner.
 - 3. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 - 4. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
 - 5. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

END OF SECTION 04810

SECTION 05120 - STRUCTURAL STEEL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes structural steel and grout.
- B. Related Sections:
 - 1. Section 05121 "Architecturally Exposed Structural Steel Framing" for additional requirements for architecturally exposed structural steel.

1.2 DEFINITIONS

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.3 PERFORMANCE REQUIREMENTS

- A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand loads indicated and comply with other information and restrictions indicated.
 - 1. Select and complete connections using schematic details indicated and AISC 360.
 - 2. Use ASD; data are given at service-load level.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. LEED Submittals:
 - 1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
- C. Shop Drawings: Show fabrication of structural-steel components.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer and fabricator.
- B. Welding certificates.

- C. Mill test reports for structural steel, including chemical and physical properties.
- D. Source quality-control reports.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.
- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- C. Comply with applicable provisions of the following specifications and documents:
 - 1. AISC 303.
 - 2. AISC 360.
 - 3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- D. Preinstallation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. W-Shapes: ASTM A 992/A 992M.
- C. Channels, Angles: ASTM A 36/A 36M.
- D. Plate and Bar: ASTM A 36/A 36M.
- E. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.
- F. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
- G. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

- A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers; all with plain finish.
- B. Headed Anchor Rods: ASTM F 1554, Grade 55, weldable, straight.
 - 1. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.

2.3 PRIMER

- A. Primer: Comply with Section 09911 "Exterior Painting," Section 09912 "Interior Painting," and Section 09960 "High-Performance Coatings."
- B. Primer: SSPC-Paint 25, Type II, zinc oxide, alkyd, linseed oil primer.
- C. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

2.4 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.
- B. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

2.6 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

2.7 SHOP PRIMING

- A. Shop prime steel surfaces except the following:
 - 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 - 2. Surfaces to be field welded.
 - 3. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
 - 4. Galvanized surfaces.

- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
 - 1. SSPC-SP 2, "Hand Tool Cleaning."
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. Base Bearing and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Weld plate washers to top of baseplate.
 - 3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 - 4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.3 FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.
- B. Bolted Connections: Bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- C. Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.
- D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

END OF SECTION 05120

SECTION 05210 - STEEL JOISTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. K-series steel joists.
2. K-series steel joist substitutes.
3. Joist accessories.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of joist, accessory, and product.

B. LEED Submittals:

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.

C. Shop Drawings:

1. Include layout, designation, number, type, location, and spacing of joists.
2. Include joining and anchorage details, bracing, bridging, and joist accessories; splice and connection locations and details; and attachments to other construction.

1.3 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Manufacturer certificates.

C. Mill Certificates: For each type of bolt.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer certified by SJI to manufacture joists complying with applicable standard specifications and load tables in SJI's "Specifications."

1. Manufacturer's responsibilities include providing professional engineering services for designing special joists to comply with performance requirements.

B. Welding Qualifications: Qualify field-welding procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle joists as recommended in SJI's "Specifications."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

2.2 K-SERIES STEEL JOISTS

- A. Manufacture steel joists of type indicated according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle top- and bottom-chord members, underslung ends, and parallel top chord.
- B. Steel Joist Substitutes: Manufacture according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle or -channel members.

2.3 PRIMERS

- A. Primer: SSPC-Paint 15, or manufacturer's standard shop primer complying with performance requirements in SSPC-Paint 15.

2.4 JOIST ACCESSORIES

- A. Bridging: Schematically indicated. Detail and fabricate according to SJI's "Specifications" and as required for uplift. Furnish additional erection bridging if required for stability.
- B. Furnish ceiling extensions where ceiling is attached to joists, either extended bottom-chord elements or a separate extension unit of enough strength to support ceiling construction. Extend ends to within 1/2 inch of finished wall surface unless otherwise indicated.
- C. Carbon-Steel Bolts and Threaded Fasteners: ASTM A 307, Grade A, carbon-steel, hex-head bolts and threaded fasteners; carbon-steel nuts; and flat, unhardened steel washers.
 - 1. Finish: Plain, uncoated.
- D. Furnish miscellaneous accessories including splice plates and bolts required by joist manufacturer to complete joist assembly.

2.5 CLEANING AND SHOP PAINTING

- A. Clean and remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories.

- B. Apply one coat of shop primer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Do not install joists until supporting construction is in place and secured.
- B. Install joists and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Specifications," joist manufacturer's written recommendations, and requirements in this Section.
 - 1. Before installation, splice joists delivered to Project site in more than one piece.
 - 2. Space, adjust, and align joists accurately in location before permanently fastening.
 - 3. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.
- C. Field weld joists to supporting steel bearing plates and framework. Coordinate welding sequence and procedure with placement of joists. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
- D. Bolt joists to supporting steel framework using carbon-steel bolts.
- E. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.

3.2 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor will engage a qualified independent testing and inspecting agency to inspect field welds and to perform field tests and inspections and prepare test and inspection reports.

END OF SECTION 05210

SECTION 05310 - STEEL DECK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Roof deck.
 - 2. Composite floor deck.
 - 3. Noncomposite form deck.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of deck, accessory, and product indicated.
- B. LEED Submittals:
 - 1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
- C. Shop Drawings:
 - 1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.3 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Product certificates.
- C. Evaluation reports.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.
- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
- B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- C. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 ROOF DECK

- A. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:
 - 1. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G90 zinc coating.
 - 2. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G90 zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.
 - a. Color: Manufacturer's standard.
 - 3. Deck Profile: As indicated.
 - 4. Profile Depth: As indicated.
 - 5. Design Uncoated-Steel Thickness: As indicated.

2.3 NONCOMPOSITE FORM DECK

- A. Noncomposite Form Deck: Fabricate ribbed-steel-sheet noncomposite form-deck panels to comply with "SDI Specifications and Commentary for Noncomposite Steel Form Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:

1. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G90 zinc coating.
2. Profile Depth: 9/16 inch.
3. Design Uncoated-Steel Thickness: 0.0295 inch.

2.4 ACCESSORIES

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
- C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.
- D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
- E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
- F. Flat Sump Plates: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.
- G. Galvanizing Repair Paint: ASTM A 780.
- H. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.
- B. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
- C. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- D. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- E. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

- F. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- G. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to drawings or deck manufacturer's written instructions.
- H. Roof Sump Pans and Sump Plates: Install over openings provided in roof deck and mechanically fasten flanges to top of deck. Space mechanical fasteners not more than 12 inches apart with at least one fastener at each corner.
 - 1. Install reinforcing channels or zees in ribs to span between supports and mechanically fasten.
- I. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld or mechanically fasten to substrate to provide a complete deck installation.
 - 1. Weld cover plates at changes in direction of roof-deck panels unless otherwise indicated.
- J. Pour Stops and Girder Fillers: Weld steel-sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.
- K. Floor-Deck Closures: Weld steel-sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

3.2 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Field welds will be subject to inspection.
- C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.
- D. Remove and replace work that does not comply with specified requirements.
- E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.3 PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.

END OF SECTION 05310

SECTION 05400 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Exterior load-bearing wall framing.
 - 2. Exterior non-load-bearing wall framing.
 - 3. Roof framing.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product and accessory indicated.
- B. LEED Submittals:
 - 1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
- C. Shop Drawings: Show layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification data.
- B. Welding certificates.
- C. Product test reports.
- D. Research/evaluation reports.

1.4 QUALITY ASSURANCE

- A. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements.
- B. Welding: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code-Sheet Steel."
- C. Fire-Test-Response Characteristics: Where indicated, provide cold-formed metal framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

- D. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."
 - 1. Comply with AISI's "Standard for Cold-Formed Steel Framing - Truss Design."
 - 2. Comply with AISI's "Standard for Cold-Formed Steel Framing - Header Design."

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:
 - 1. Grade: ST50H.
 - 2. Coating: G90 or equivalent.

2.2 LOAD-BEARING WALL FRAMING

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
 - 1. Minimum Base-Metal Thickness: as indicated.
- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and same minimum base-metal thickness as steel studs.
- C. Steel Box or Back-to-Back Headers: Manufacturer's standard C-shapes used to form header beams, of web depths indicated, punched, with stiffened flanges, and as follows:
 - 1. Minimum Base-Metal Thickness: as indicated.
 - 2. Flange Width: 1-5/8 inches.

2.3 EXTERIOR NON-LOAD-BEARING WALL FRAMING

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
 - 1. Minimum Base-Metal Thickness: as indicated.
 - 2. Flange Width: 1-5/8 inches.
- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and same minimum base-metal thickness as steel studs.
- C. Vertical Deflection Clips: Manufacturer's standard **[bypass]** **[head]** clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web.

2.4 ROOF FRAMING

- A. Roof Framing Members: Manufacturer's standard C-shaped steel sections, of web depths indicated, unpunched, with stiffened flanges.

2.5 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members, unless otherwise indicated.
- B. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.
- C. Anchor Bolts: ASTM F 1554, Grade 55, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C.
- D. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
- E. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.
- F. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
 - 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

2.6 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: ASTM A 780.
- B. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.
- C. Shims: Load bearing, high-density multimonomer plastic, nonleaching.
- D. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Install load bearing shims or grout between the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations to ensure a uniform bearing surface on supporting concrete or masonry construction.
- B. Install sealer gaskets to isolate the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations.

3.2 INSTALLATION, GENERAL

- A. Install cold-formed metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions" and to manufacturer's written instructions unless more stringent requirements are indicated.
- B. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.
- C. Install framing members in one-piece lengths.
- D. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- E. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
- F. Install insulation, specified in Section 07210 "Building Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- G. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- H. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
 - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.3 LOAD-BEARING WALL INSTALLATION

- A. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings as follows:
 - 1. Anchor Spacing: as indicated.

- B. Squarely seat studs against top and bottom tracks with gap not exceeding of 1/8 inch between the end of wall framing member and the web of track. Fasten both flanges of studs to top and bottom tracks. Space studs as follows:
 - 1. Stud Spacing: As indicated.
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar configurations.
- D. Align studs vertically where floor framing interrupts wall-framing continuity. Where studs cannot be aligned, continuously reinforce track to transfer loads.
- E. Align floor and roof framing over studs. Where framing cannot be aligned, continuously reinforce track to transfer loads.
- F. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure as indicated.
- G. Install headers over wall openings wider than stud spacing. Locate headers above openings as indicated. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.
 - 1. Frame wall openings with not less than a double stud at each jamb of frame as indicated on Shop Drawings. Fasten jamb members together to uniformly distribute loads.
 - 2. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.
- H. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.
 - 1. If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.
- I. Install horizontal bridging in stud system of the type and spacing indicated on the drawings. Fasten at each stud intersection.
 - 1. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs with a minimum of 2 screws into each flange of the clip angle for framing members up to 6 inches deep.
 - 2. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
 - 3. Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.
- J. Install steel sheet diagonal bracing straps to both stud flanges, terminate at and fasten to reinforced top and bottom tracks. Fasten clip-angle connectors to multiple studs at ends of bracing and anchor to structure.
- K. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.4 EXTERIOR NON-LOAD-BEARING WALL INSTALLATION

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.
- B. Fasten both flanges of studs to top and bottom track, unless otherwise indicated. Space studs as follows:
 - 1. Stud Spacing: As indicated.
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
 - 1. Connect vertical deflection clips to studs and anchor to primary building structure.
- E. Install horizontal bridging in wall studs of the type and spacing indicated on the drawings. Fasten at each stud intersection.
 - 1. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.
 - 2. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
 - 3. Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.
- F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable curtain-wall-framing system.

3.5 ROOF FRAMING INSTALLATION

- A. Install perimeter joist track sized to match joists. Align and securely anchor or fasten track to supporting structure at corners, ends, and spacings indicated on Shop Drawings.
- B. Install joists bearing on supporting frame, level, straight, and plumb or as indicated; adjust to final position, brace, and reinforce. Fasten joists to both flanges of joist track.
- C. Frame openings with built-up headers consisting of joist and joist track, nesting joists, or another combination of connected joists if indicated.
- D. Install bridging at intervals indicated. Fasten bridging at each joist intersection as follows:
 - 1. Bridging: Joist-track solid blocking of width and thickness indicated, secured to joist webs.
 - 2. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and joist-track solid blocking of width and thickness indicated. Fasten flat straps to bottom flange of joists and secure solid blocking to joist webs.
- E. Secure joists to load-bearing interior walls to prevent lateral movement of bottom flange.

- F. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors, and fasteners, to provide a complete and stable joist-framing assembly.

3.6 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05400

SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Loose bearing and leveling plates.
 - 2. Loose steel lintels.
 - 3. Shelf angles.
 - 4. Miscellaneous steel framing and supports.
- B. See Division 5 Section "Pipe and Tube Railings" for metal pipe and tube handrails and railings.

1.2 SUBMITTALS

- A. Shop Drawings: Include plans, elevations, sections, details of installation, and attachments to other Work.
- B. Templates: For anchor bolts.

PART 2 - PRODUCTS

2.1 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces without blemishes.
- B. Ferrous Metals:
 - 1. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
 - 2. Steel Tubing: Cold-formed steel tubing complying with ASTM A 500.
 - 3. Steel Pipe: ASTM A 53, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.
 - 4. Slotted Channel Framing: Cold-formed metal channels 1-5/8 by 1-5/8 inches with flange edges returned toward web and with 9/16-inch- wide slotted holes in webs at 2 inches o.c. Channels made from galvanized steel complying with ASTM A 653/A 653M, structural quality, Grade 33, with G90 coating; 0.079-inch nominal thickness.
 - 5. Iron Castings: ASTM A 47, Grade 32510 malleable iron or ASTM A 48, Class 30 gray iron.
 - 6. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either ASTM A 47 malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.

2.2 PAINT

- A. Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements in FS TT-P-664 and compatible with finish paint systems indicated.

- B. Shop Primer for Ferrous Metal: SSPC-Paint 20, organic zinc-rich primer compatible with topcoat.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Carboline Company; Carboline 621.
 - b. PPG Industries, Inc.; Aquapon Zinc-Rich Primer 97-670.
 - c. Tnemec Company, Inc.; Tneme-Zinc 90-97.
- C. Galvanizing Repair Paint: SSPC-Paint 20, high-zinc-dust-content paint for regalvanizing welds in steel.

2.3 MISCELLANEOUS MATERIALS

- A. Fasteners: Type 304 or 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, where built into exterior walls, of type, grade, and class required by application indicated.
- B. Nonshrink, Nonmetallic Grout: ASTM C 1107, factory-packaged, nonstaining, noncorrosive, nongaseous grout.
- C. Concrete Fill: Comply with requirements in Division 3 Section "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 3000 psi, unless otherwise indicated.

2.4 FABRICATION

- A. Connections, General: Use connections that maintain structural value of joined pieces.
 - 1. Shear and punch metals cleanly and accurately. Remove burrs.
 - 2. Weld corners and seams continuously. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals. Obtain fusion without undercut or overlap. Remove welding flux immediately. Finish exposed welds smooth and blended.
 - 3. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes.
 - 4. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Locate joints where least conspicuous.
- B. Loose Bearing and Leveling Plates: Fabricate loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.
- C. Loose Steel Lintels: Fabricate loose structural-steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
 - 1. Galvanize loose steel lintels located in exterior walls.
- D. Shelf Angles: Fabricate shelf angles of sizes indicated and for attachment to framing. Fabricate with horizontally slotted holes to receive 3/4-inch bolts, spaced not more than 6 inches from ends and 24 inches o.c.

1. Galvanize shelf angles to be installed in exterior walls.
 2. Furnish wedge-type concrete inserts, complete with fasteners, to attach shelf angles to cast-in-place concrete.
- E. Miscellaneous Framing and Supports: Fabricate steel framing and supports that are not a part of structural-steel framework as necessary to complete the Work from structural steel of welded construction. Cut, drill, and tap units to receive hardware, hangers, and similar items.
1. Where indicated to be cast into concrete or built into masonry, equip with integrally welded anchors at 24 inches o.c.

2.5 FINISHES

- A. Finish metal fabrications after assembly. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Shop prime ferrous-metal items not indicated to be galvanized.
1. Hot-dip galvanize items indicated to be galvanized to comply with ASTM A 123 or ASTM A 153/A 153M as applicable.
 2. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."
 3. Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1," for shop painting.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Provide anchorage devices and fasteners for securing metal fabrications to in-place construction. Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, with edges and surfaces level, plumb, and true.
1. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
 2. Fit exposed connections accurately together. Weld connections, unless otherwise indicated. Do not weld, cut, or abrade galvanized surfaces.
- B. Set bearing and leveling plates on cleaned surfaces using wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts and pack with nonshrink, nonmetallic grout.
- C. Bollards:
1. Anchor in place with concrete footings. Support and brace bollards in position in footing excavations until concrete has been placed and cured.
 2. Fill bollards solidly with concrete, mounding top surface.
- D. Touch up surfaces and finishes after erection.
1. Painted Surfaces: Clean field welds, bolted connections, and abraded areas and touch up paint with the same material as used for shop painting.
 2. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 05500

SECTION 05510 – METAL STAIRS GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Shop fabricated steel stairs with concrete pan treads and landings.
 - 2. Guard rails and handrails.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section 03300 - Cast-In-Place Concrete.

1.2 REFERENCES

- A. American Welding Society (AWS) D1.1 - Structural Welding Code.
- B. ASTM International (ASTM):
 - 1. A36/A36M - Standard Specification for Carbon Structural Steel.
 - 2. A123/A123M - Standard Specification for Zinc (Hot-Galvanized) Coatings on Iron and Steel Products.
 - 3. A283 - Standard Specification for Low and Intermediate Strength Carbon Steel Plates.
 - 4. A307 - Standard Specification for Carbon Steel Externally Threaded Standard Fasteners.
 - 5. A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
 - 6. A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
 - 7. A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
 - 8. A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
 - 9. A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength, Low-Alloy and High-Strength Low-Alloy with Improved Formability.
 - 10. C94 - Standard Specification for Ready-Mixed Concrete.
 - 11. E985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings.
- C. National Association of Architectural Metal Manufacturers (NAAMM):
 - 1. AMP 510 - Metal Stairs Manual.
 - 2. MBG 531 - Metal Bar Grating Manual.
- D. Society for Protective Coatings (SSPC) - Painting Manual.

1.3 SYSTEM DESCRIPTION

- A. Design Requirements:
 - 1. Design stair assembly to support a uniform live load of 100 PSF and a concentrated load of 300 pounds, with maximum deflection of L/180.
 - 2. Design guard rails and handrails to resist following without damage or permanent set:
 - a. 50 pounds per linear foot applied in any direction at top, transferred via attachments and supports to building structure.
 - b. Concentrated 200 pound load applied in any direction at any point along top, transferred via attachments and supports to building structure.

- c. Maximum deflection under loading: $L/120$.
- 3. Concentrated and uniform loads do not need to be applied simultaneously.
- 4. Perform design under direct supervision of Professional Structural Engineer licensed in State in which project is located, with minimum 2 years experience in work of this Section.

B. Fabricate stair assembly to NAAMM AMP 510, Industrial Class.

C. Fabricate guard rails and handrails in accordance with ASTM E985.

1.4 SUBMITTALS

A. Submittals for Review:

1. Shop Drawings:

- a. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
- b. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.

B. Sustainable Design Submittals:

- 1. Recycled Content.
- 2. Regional Materials.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Minimum 5 years experience in work of this Section.

B. Perform Work in accordance with ASTM E985.

PART 2 PRODUCTS

2.1 MATERIALS - STEEL

A. Sections: ASTM A36/A36M.

B. Plate: ASTM A283.

C. Pipe: ASTM A501.

D. Tube: ASTM A500.

E. Sheet: ASTM A1008/A1008M.

F. Recycled Content: Minimum 75 percent, with minimum 40 percent classified as post consumer.

2.2 MATERIALS - CONCRETE

A. Concrete: ASTM C94; 3000 psi 28 day strength, 2 to 3 inch slump.

B. Concrete Reinforcement: Mesh type, unfinished.

2.3 ACCESSORIES

A. Bolts, Nuts, and Washers: ASTM A307.

B. Primer Paint: SSPC 15, Type 1, red oxide.

2.4 FABRICATION

A. Fit and shop assemble components in largest practical sections, for delivery to site.

- B. Fabricate components with joints tightly fitted and secured.
- C. Continuously weld connections. Welding to conform to AWS D1.1.
- D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
- F. Accurately form components required for anchorage of stairs, [landings,] and railings to each other and to building structure.
- G. Treads and Landings:
 - 1. Fabricate from minimum 14 gage steel sheet, shaped to receive concrete.
 - 2. Fabricate stairs with closed steel sheet risers.
 - 3. Reinforce underside with steel angles when required to resist design loads.
 - 4. Secure pans to stringers with clip angles, welded in place.

2.5 FINISHES

- A. Steel:
 - 1. Surface preparation: SSPC SP2 - Hand Tool Cleaning or SP3 - Power Tool Cleaning.
 - 2. Application: One coat; follow coating manufacturer's instructions.
 - 3. Minimum dry film thickness: 2.0 mils.
 - 4. Do not prime surfaces in direct contact with concrete or where field welding is required.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install components plumb and level, accurately fitted, free from distortion and defects.
- B. Provide anchors, angles, hangers, and struts required for connecting stairs to structure.
- C. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- D. Field weld components indicated on Shop Drawings. Perform field welding in accordance with AWS D1.1.
- E. Field bolt and weld to match shop bolting and welding. Conceal bolts and screws whenever possible.
- F. Mechanically fasten joints butted tight, flush, and hairline. Grind welds smooth and flush.
- G. Fill treads and landings with concrete. Consolidate concrete, strike off flush with perimeter frame, and apply light broom finish with striations parallel to long dimension of tread.
- H. Installation Tolerances:
 - 1. Maximum variation from plumb: 1/4 inch per story, noncumulative.
 - 2. Maximum offset from true alignment: 1/4 inch.

3.2 ADJUSTING

- A. Clean and touch up primer paint at welded and abraded surfaces with same product as applied in shop.

END OF SECTION

SECTION 05521 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes pipe and tube handrails and railings made of the following:
 - 1. Steel.
- B. See Division 5 Section "Metal Stairs" for steel pipe handrails and railings included with metal stairs.

1.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance of Handrails and Railings:
 - 1. Comply with ASTM E 985, based on testing per ASTM E 894 and ASTM E 935.
 - 2. Capable of withstanding structural loads required by ASCE 7 without exceeding allowable design working stresses of materials involved.
 - 3. Capable of withstanding the following structural loads without exceeding the allowable design working stress of materials involved:
 - a. Top Rail of Guards: Concentrated load of 200 lbf applied at any point and in any direction, and a uniform load of 50 lbf/ft. applied horizontally and concurrently with uniform load of 100 lbf/ft. applied vertically downward. Concentrated and uniform loads need not be assumed to act concurrently.
 - b. Handrails Not Serving as Top Rails: Concentrated load of 200 lbf applied at any point and in any direction, and a uniform load of 50 lbf/ft. applied in any direction. Concentrated and uniform loads need not be assumed to act concurrently.
 - c. Infill Area of Guards: Horizontal concentrated load of 200 lbf applied to 1 sq. ft. at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area. Load on infill area need not be assumed to act concurrently with loads on top rails.

1.3 SUBMITTALS

- A. Product Data: For mechanically connected handrails and railings, grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details of installation, attachments to other Work.
 - 1. Include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Samples: For each exposed finish required.
- D. Test Reports: Indicating handrails and railings comply with ASTM E 985.

PART 2 - PRODUCTS

1. Steel Pipe and Tube Railings:
 - a. Locally fabricated from stock steel components.

2.2 METALS

- A. Steel and Iron:
 1. Steel Pipe: ASTM A 53, Type F or Type S, Grade A, standard weight (Schedule 40), unless another grade and weight are required by structural loads.
 - a. Black finish, unless otherwise indicated.
 2. Steel Tubing: Cold-formed steel tubing, ASTM A 500, Grade A, unless another grade is required by structural loads.
 3. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.3 MISCELLANEOUS MATERIALS

- A. Welding Electrodes and Filler Metal: Provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.
- B. Fasteners: Same basic metal as fastened metal; concealed, unless otherwise indicated or unavoidable, and standard with systems indicated.
- C. Anchors: Fabricated from corrosion-resistant materials with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined per ASTM E 488.
- D. Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements in FS TT-P-664; with good resistance to corrosion; and compatible with finish paint systems indicated.
- E. Grout and Anchoring Cement: Premixed, nonshrink, nonmetallic grout complying with ASTM C 1107 or erosion-resistant, nonshrink, anchoring cement; recommended by manufacturer for use indicated.

2.4 FABRICATION

- A. General: Fabricate to design, dimensions, and details indicated, but not less than that required to support structural loads.
 1. Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
- B. Form changes in direction of railing members by bending, mitering, or inserting prefabricated flush-elbow fittings.

- C. Form curves by bending in jigs to produce uniform curvature without buckling, twisting, cracking, or otherwise deforming exposed surfaces.
- D. Welded Connections: Connect handrail and railing members by welding. Cope and weld or use welded-in fittings. Weld connections continuously.
- E. Nonwelded Connections: Connect handrail and railing members with concealed mechanical fasteners and fittings.
- F. Brackets, Flanges, Fittings, and Anchors: Fabricate wall brackets, flanges, miscellaneous fittings, and anchors to connect handrails and railings to other work.
 - 1. Cast or form metal of same material and finish as rails.
- G. Close exposed ends of handrail and railing members with prefabricated end fittings.
- H. Provide wall returns at ends of wall-mounted handrails.

2.5 FINISHES

- A. Steel:
 - 1. Shop-Primed Steel Finish: Prepare to comply with SSPC-SP 7, "Brush-off Blast Cleaning" and apply primer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Perform cutting, drilling, and fitting required to install handrails and railings. Set units accurately in location, alignment, and elevation.
 - 1. Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
 - 2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
 - 3. Align rails so variations from level for horizontal members and from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- B. Anchor posts in concrete by inserting into preset pipe sleeves and grouting annular space.
- C. Anchor posts to metal surfaces with oval flanges.
- D. Anchor railing ends into concrete and masonry with round flanges connected with postinstalled anchors and bolts.
- E. Attach handrails to wall with wall brackets.
 - 1. For steel-framed gypsum board assemblies, use hanger or lag bolts set into wood backing between studs or fasten to steel framing or concealed reinforcements using self-tapping screws of size and type required to support structural loads.
- F. Touch up surfaces and finishes after erection.

Community Center Addition and Renovations
Gulf Breeze, Florida

1. Painted Surfaces: Clean field welds, bolted connections, and abraded areas and touch up paint with the same material as used for shop painting.

END OF SECTION 05521

SECTION 05811 - ARCHITECTURAL JOINT SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes interior joint systems for the following applications:
 - 1. Areas subject to pedestrian traffic.
 - 2. Walls.
 - 3. Ceilings.

1.2 SUBMITTALS

- A. Product Data: For each joint system indicated.
- B. Shop Drawings: Include Placement Drawings showing entire length of each joint system and details.

1.3 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Where indicated, provide joint systems incorporating fire barriers that are identical to those of assemblies tested for fire resistance per UL 2079, including hose-stream test of vertical wall assemblies, by a testing and inspecting agency acceptable to authorities having jurisdiction. Joint systems to be same fire rating as adjacent construction assembly.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
 - 1. Basis-of-Design Product: The design for each architectural joint system is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

2.2 MATERIALS

- A. Aluminum: ASTM B 221, alloy 6063-T5 for extrusions; ASTM B 209, alloy 6061-T6 for sheet and plate.
 - 1. Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious materials.
- B. Preformed Seals: Single or multicellular extruded elastomeric seals designed with or without continuous, longitudinal, internal baffles. Formed to be installed in frames or with anchored flanges, in color indicated or, if not indicated, as selected from manufacturer's standard colors.

- C. Accessories: Manufacturer's standard anchors, clips, fasteners, set screws, spacers, flexible moisture barrier and filler materials, drain tubes, lubricants, adhesives, and other accessories compatible with material in contact, as indicated or required for complete installations.

2.3 ARCHITECTURAL JOINT SYSTEMS

- A. General: Of design, basic profile, materials, and operation indicated and with the capability to accommodate joint widths indicated and variations in adjacent surfaces.
 - 1. Furnish units in longest practicable lengths to minimize number of end joints.
 - 2. Include closure materials and transition pieces, tee-joints, corners, curbs, cross-connections, and other accessories as required for continuous joint systems.
 - 3. Frames for Strip Seals: Designed with semiclosed cavity that provides a mechanical lock for seals of type indicated.
 - 4. Public Arena Seals: Non-slip seals designed for installation on treads and risers and to lie flat with adjacent surfaces, and complying with ADA guidelines for public areas.
- B. Floor-to-Floor Joint Systems :
 - 1. Location: Interior Floor Expansion Joints – 1st floor.
 - 2. Use: Pedestrian traffic joints.
 - 3. Basis-of-Design Product: C/S Group 1" "Thinline" Model GFT-100 flush floor covers(no fire barrier), 2" deep.
- C. Floor-to-Wall Joint Systems :
 - 1. Location: Interior Floor Expansion Joints – 1st floor.
 - 2. Use: Pedestrian traffic joints.
 - 3. Basis-of-Design Product: C/S Group 1" "Thinline" Model GFTW-100 flush floor covers(no fire barrier), 2" deep.
- D. Wall-to-Wall and Wall to Gypsum Board/Soffit Joint Systems :
 - 1. Location: Interior Wall and Gypsum Board Ceilings and Soffit Expansion Joints
 - 2. Use: Wall / Soffit joints.
 - 3. Basis-of-Design Product: C/S Group 1" "Thinline" Model FWF-100 flush wall/ceiling covers, depth to accommodate drywall and finish, with fire barrier where required.
 - 4. Fire-Resistance Ratings: Provide manufacturer's standard fire barrier with a rating not less than that of adjacent construction.

2.4 FINISHES

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - 1. Applying a strippable, temporary protective covering on exposed surfaces to protect mechanical finishes from damage by before shipping.
- B. Aluminum:
 - 1. Mill Finish: AA-M10 Mechanical finish as fabricated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Cut, drill, and fit architectural joint systems as required for complete installation. Install with hairline mitered corners where units change directions and hairline joints where unit lengths abut or units abut other materials. Secure to in-place construction.
 - 1. Install fire barriers to provide continuous, uninterrupted fire resistance throughout length of joint, including transitions and end joints.

END OF SECTION 05811

SECTION 06100 ROUGH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Wood blocking and furring.
 - 2. Telephone and electrical panel backboards.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

- A. American Wood Protection Association (AWPA) U1 - Use Category System - User Specification for Treated Wood.
- B. ASTM International (ASTM):
 - 1. A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 2. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 3. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws and Studs.
- C. Engineered Wood Association (APA) PRP-108 - Performance Standards and Qualification Policy for Structural-Use Panels.
- D. National Institute of Standards and Technology (NIST) - Product Standard PS 20 - American Softwood Lumber Standard.
- E. Southern Pine Inspection Bureau (SPIB) - Standard Grading Rules for Southern Pine Lumber.

1.3 SUBMITTALS

- A. Sustainable Design Submittals:
 - 1. Materials Reuse.
 - 2. Recycled Content.
 - 3. Regional Materials.
 - 4. Rapidly Renewable Materials.
 - 5. Low-Emitting Materials.

1.4 QUALITY ASSURANCE

- A. Lumber Grading Agency: Certified to NIST PS 20.
- B. Identify lumber and panel products by official grade mark.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store materials minimum 6 inches above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation.

- B. Do not store seasoned or treated materials in damp location.
- C. Protect edges and corners of sheet materials from damage.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Lumber:
 - 1. Grading rules: SPIB.
 - 2. Species: SYP
 - 3. Grade: 2
 - 4. Surfacing: Surfaced four sides (S4S) .
 - 5. Maximum moisture content: 19 percent.

2.2 ACCESSORIES

- A. Fasteners:
 - 1. Type and size: As required by conditions of use.
 - 2. Exterior locations and treated products: Hot-dip galvanized steel, ASTM A153/A153M, G90 coating class or Stainless steel, ASTM F593, Type 304 or 316.
 - 3. Other interior locations: Plain steel.

2.3 FABRICATION

- A. Preservative Treatment:
 - 1. Treat lumber in accordance with AWWA U1:
 - 2. Treatment process: Type ACQ - Ammoniacal Copper Quaternary (ACQ); free from arsenic, chromium, and other EPA classified hazardous preservatives.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Provide blocking, nailers, grounds, furring, and other similar items required to receive and support work.
- B. Set members level, plumb, and rigid.
- C. Curb roof openings except where prefabricated curbs are provided. Form corners by alternating lapping side members.
- D. Install telephone and electrical panel backboards where indicated. Oversize panel by 12 inches on all sides.

END OF SECTION

SECTION 06164 - GYPSUM SHEATHING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Exterior gypsum wall sheathing.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

- A. ASTM International (ASTM):
 - 1. C514 - Standard Specification for Nails for the Application of Gypsum Wallboard.
 - 2. C1002 - Standard Specification for Steel Drill Screws for the Application of Gypsum Board.
 - 3. C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
 - 4. C1280 - Standard Specification for Application of Gypsum Sheathing Board.
 - 5. C1396 - Standard Specification for Gypsum Board.
 - 6. D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

1.3 SUBMITTALS

- A. Submittals for Review:
 - 1. Product Data: Illustrate panel product types, thicknesses, and installation.
- B. Sustainable Design Submittals:
 - 1. Recycled Content.
 - 2. Regional Materials.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. GP Gypsum Corporation. (www.gp.com)
 - 2. National Gypsum Co. (www.nationalgypsum.com)
 - 3. Temple Inland. (<http://www.greenglassinfo.com>)
- B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Exterior Sheathing:

1. Type: ASTM C1177/C1177M; 48 inches wide x 5/8 inch thick, maximum practical length, square cut ends and edges.
2. Mold resistance: 10, tested to ASTM D3273.
3. Recycled content: Minimum 90 percent.

2.3 ACCESSORIES

- A. Fasteners: ASTM C1002, Type W screws, hot-dip galvanized or fluoropolymer coated steel, minimum 5/8 inch penetration into framing.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with ASTM C1280 and manufacturer's instructions.
- B. Accurately cut panels to fit around openings and projections.
- C. Apply panels horizontally, tongue edge up, with ends occurring over supports. Stagger end joints in adjacent rows.
- D. Fasten panels to framing at maximum 8 inches on center. Place fasteners minimum 3/8 inch from edges of panels; drive heads flush with surface. Stagger fasteners at abutting edges.

END OF SECTION

SECTION 06410 - ARCHITECTURAL WOOD CASEWORK

1.1 SUMMARY

- A. Section Includes:
 - 1. Special fabricated cabinet units.
 - 2. Plastic laminate countertops.
 - 3. Shop finishing.
 - 4. Cabinet hardware.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section 07920 - Joint Sealers.

1.2 REFERENCES

- A. Architectural Woodwork Institute (AWI) - Architectural Woodwork Quality Standards.
- B. Association of Electrical and Medical Imaging Equipment Manufacturers (NEMA) LD-3 - High Pressure Decorative Laminates.

1.3 SUBMITTALS

- A. Submittals for Review:
 - 1. Shop Drawings:
 - a. Include dimensioned plan, sections, elevations, and details, including interface with adjacent work.
 - b. Designate wood species and finishes.
 - 2. Samples:
 - a. 2 x 3 inch plastic laminate samples showing available colors and finishes.
 - b. Each hardware component.
- B. Sustainable Design Submittals:
 - 1. Materials Reuse.
 - 2. Recycled Content.
 - 3. Regional Materials.
 - 4. Rapidly Renewable Materials.
 - 5. Low-Emitting Materials.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications:
 - 1. Minimum 5 years documented experience in work of this Section.
 - 2. Certified under AWI Quality Certification Program.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Do not deliver materials until proper protection can be provided, and until needed for installation.

1.6 PROJECT CONDITIONS

- A. Environmental Requirements: HVAC system complete and operational for minimum 7 days prior to installation of cabinets.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers - Plastic Laminate:
 - 1. Formica Corp. (www.formica.com)
 - 2. Nevamar Co. (www.nevamar.com)
 - 3. Wilsonart International, Inc. (www.wilsonart.com)
- B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Panel Products:
 - 1. Graded in accordance with AWI Section 200 requirements for quality grade specified.
 - 2. Panel core: Medium density fiberboard, 100 percent recycled content, manufactured using low-emitting, urea formaldehyde-free binders.
- B. Plastic Laminate: NEMA LD-3.
 - 1. Horizontal surfaces:
 - a. Backing sheet: Grade BGF.
 - b. Other surfaces: Grade HGS.
 - 2. Vertical surfaces:
 - a. Backing sheet: Grade BLF.
 - b. Cabinet liner: Grade CLS.
 - c. Other surfaces: Grade VGP.
 - 3. Melamine laminate: Grade VGL.
 - 4. Colors: To be selected from manufacturer's full color range.]
 - 5. Finish: Matte.
- C. Lumber:
 - 1. Graded in accordance with AWI Section 100 requirements for quality grade specified, average moisture content of 6 percent.
- D. Stainless Steel:
 - 1. Food service grade

2.3 ACCESSORIES

- A. Fasteners: Type and size as required by conditions of use.
- B. Adhesives:
 - 1. Waterproof, water based type, compatible with backing and laminate materials.
 - 2. Maximum volatile organic compound (VOC) content: 70 grams per liter.
- C. Finish Hardware: As scheduled at end of Section.
- D. Joint Sealers: Specified in Section 07920.

2.4 FABRICATION

- A. Cabinets - Plastic Laminate Finish:
 - 1. Quality: AWI Section 400, Custom Grade.
 - 2. Type: Flush overlay.
 - 3. Semi-exposed surfaces: Melamine laminate.
 - 4. Fit exposed and semi-exposed panel edges with matching PVC edging.
 - 5. Fabricate drawer bodies to full depth of drawer fronts less 1/2 inch.
- B. Plastic Laminate Countertops:
 - 1. Quality: AWI Section 400, Custom Grade.
 - 2. Fabricate from panel product with lumber fronts.
 - 3. Locate end joints centered or symmetrical. Join sections with concealed clamp fasteners. Locate plastic laminate butt joints minimum 2 feet away from sinks.
 - 4. Provide holes and cutouts for mounting of sinks, and accessories.
- C. Stainless Steel Countertops and Backsplash:
 - 1. Quality: Foodservice grade welded corners
- D. Shop assemble for delivery to project site in units easily handled.
- E. Prior to fabrication, field verify dimensions to ensure correct fit.
- F. Apply plastic laminate in full uninterrupted sheets; fit corners and joints to hairline. Slightly bevel arises. Apply laminate backing sheet to reverse side of laminate faced surfaces.
- G. Where field fitting is required, provide ample allowance for cutting. Provide trim for scribing and site conditions.
- H. Provide cutouts and reinforcement for plumbing, Prime paint surfaces of cut edges.

2.5 FINISHES

PART 3 EXECUTION

3.1 PREPARATION

- A. Prior to installation, condition cabinets to average humidity that will prevail after installation.

3.2 INSTALLATION

- A. Install in accordance with AWI Section 1700, Custom Grade requirements.
- B. Set plumb, rigid and level.
- C. Scribe to adjacent construction with maximum 1/8 inch gaps.
- D. Adhere countertops, splashes, and skirts with beads of adhesive.
- E. Fill joints between tops and splashes with sealant as specified in Section 07 9200; finish flush.

3.3 FINISH HARDWARE SCHEDULE

DESCRIPTION	
Door and drawer pull	4" wire brushed chrome
Drawer slide	Full extension 75#
Door hinge	Concealed 110 degree
Cabinet lock	CCL Deadbolt
Drawer Lock	CCL Deadbolt

END OF SECTION

SECTION 07210 - BUILDING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Glass-fiber blanket insulation.
 - 2. Spray polyurethane foam insulation.
 - 3. Faced, Polyisocyanurate Board Insulation

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. LEED Submittals:
 - 1. Product Data for Credit MR 4.1**and Credit MR 4.2**: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating costs for each product having recycled content.
- C. Product test reports.
- D. Research/evaluation reports.

PART 2 - PRODUCTS

2.1 GLASS-FIBER BLANKET INSULATION

- 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. CertainTeed Corporation.
 - 2. Guardian Building Products, Inc.
 - 3. Johns Manville.
 - 4. Knauf Insulation.
 - 5. Owens Corning.
- B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

- C. Polypropylene-Scrim-Kraft-Faced, Glass-Fiber Blanket Insulation: ASTM C 665, Type II (non-reflective faced), Class A (faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier).

2.2 SPRAY POLYURETHANE FOAM INSULATION

- A. Closed-Cell Polyurethane Foam Insulation: ASTM C 1029, Type II, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.
 - 1. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
 - a. BASF Corporation.
 - b. BaySystems NorthAmerica, LLC.
 - c. Dow Chemical Company (The).
 - d. ERSystems, Inc.
 - e. Gaco Western Inc.
 - f. Henry Company.
 - g. NCFI; Division of Barnhardt Mfg. Co.
 - h. SWD Urethane Company.
 - i. Volatile Free, Inc.
 - 2. Minimum density of **1.5 lb/cu. ft. (24 kg/cu. m)**, thermal resistivity of **6.2 deg F x h x sq. ft./Btu x in. at 75 deg F (43 K x m/W at 24 deg C)**

2.3 SPRAY POLYURETHANE FOAM INSULATION

- A. Faced, Polyisocyanurate Board Insulation: ASTM C 1289, **Type II (asphalt felt or glass-fiber mat facing, Class 2 or 3, Grade 3)**, with maximum flame-spread index of 75 and smoke-developed index of 450, based on tests performed on unfaced core.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

- D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.2 INSTALLATION OF CAVITY-WALL INSULATION

- 1. Supplement adhesive attachment of insulation by securing boards with two-piece wall ties designed for this purpose and specified in Division 4 Section "Unit Masonry Assemblies." Install in accordance with manufacturer's instructions for cavity-wall application.

3.3 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Glass-Fiber Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
 - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
 - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 - 3. Maintain **3-inch (76-mm)** clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
 - 4. For metal-framed wall cavities where cavity heights exceed **96 inches (2438 mm)**, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
 - 5. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation.
 - a. Exterior Walls: Set units with facing placed toward **interior of construction**.
- C. Spray-Applied Insulation: Apply spray-applied insulation according to manufacturer's written instructions. Do not apply insulation until installation of pipes, ducts, conduits, wiring, and electrical outlets in walls is completed and windows, electrical boxes, and other items not indicated to receive insulation are masked.
- D. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
 - 1. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

END OF SECTION 07210

SECTION 07211 – FOAMED IN PLACE INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Foamed-in-place insulation in masonry cavities.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

- A. ASTM International (ASTM):
 - 1. C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
 - 2. C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 - 3. D5116 - Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products.
 - 4. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

- A. Submittals for Review:
 - 1. Product Data: Provide product description, insulation properties, and preparation requirements.
- B. Quality Control Submittals:
 - 1. Certificates of Compliance: Certification from an independent testing laboratory that insulation meets fire hazard classification requirements.
- C. Sustainable Design Submittals:
 - 1. Regional Materials.
 - 2. Low-Emitting Materials.

1.4 QUALITY ASSURANCE

- A. Applicator Qualifications: Minimum 3 years experience in work of this Section.
- B. Fire Hazard Classification: Maximum flame spread/smoke developed rating of 25/450, tested to ASTM E84.

1.5 PROJECT CONDITIONS

- A. Do not install insulation when ambient temperature is below 70 degrees F.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Core Foam. (www.cfifoam.com)
 - 2. Demilec USA (www.demilecusa.com)
 - 3. Polymaster, Inc. (www.polymaster.com)
 - 4. Thermal Corp. of America. (www.thermcofoam.com)

- B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Foamed-In-Place Insulation:
 - 1. Type: Two component, plastic resin and catalyst, cold setting foam, open cell.
 - 2. R-value: Minimum 4.4 per inch at 75 degrees F, tested to ASTM C177 or ASTM C518.
 - 3. No CFC or HCFC emissions and total formaldehyde emissions less than 1 percent, cured for 7 days and tested to ASTM D5116 for 24 hours.

PART 3 EXECUTION

3.1 PREPARATION

- A. Protect adjacent surfaces from accidental application.
- B. Drill access holes in mortar joints at spacings required by manufacturer.

3.2 APPLICATION

- A. Apply insulation in accordance with manufacturer's instructions.
- B. Apply insulation by froth method, to uniform monolithic density without voids.
- C. Patch access holes with mortar; finish flush with adjacent surfaces.

3.3 ADJUSTING

- A. Patch damaged areas.

END OF SECTION

SECTION 07220 - ROOF INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Rigid roof insulation.
 - 2. Roof sheathing.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

- A. American Society of Civil Engineers (ASCE) 7 - Minimum Design Loads for Buildings and Other Structures.
- B. ASTM International (ASTM):
 - 1. C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - 2. D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
- C. Factory Mutual Insurance Co. (FM) Property Loss Prevention Data Sheet 1-28 - Design Wind Loads.
- D. National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual.

1.3 SYSTEM DESCRIPTION

- A. Design Requirements: Design roofing system to resist minimum wind loads as designated on structural drawings "Roof Net Uplift Diagram".

1.4 SUBMITTALS

- A. Submittals for Review:
 - 1. Product Data: Manufacturer's descriptive data including thermal values.
- B. Sustainable Design Submittals:
 - 1. Recycled Content.
 - 2. Regional Materials.

1.5 QUALITY ASSURANCE

- A. Roof Insulation Attachment: Conform to requirements for design wind pressures.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Protect materials against moisture absorption, direct sunlight, damage, and temperatures above 110 degrees F and below 40 degrees F.
- B. Store materials off ground or roof deck on pallets. Cover materials stored outside with breathable covering, properly vented.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers- Insulation:
 - 1. Atlas Roofing Corporation. (www.atlasroofing.com)
 - 2. Hunter Panels. (www.hpanels.com)
 - 3. Rmax. (www.rmaxinc.com)
- B. Acceptable Manufacturers - Roof Sheathing:
 - 1. GP Gypsum Corporation. (www.gp.com)
- C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Rigid Roof Insulation:
 - 1. Type: ASTM C1289, Type II, rigid polyisocyanurate faced both sides with glass fiber mat facings.
 - 2. Edges: Square.
 - 3. Thermal resistance: Minimum R value of 15, calculated in accordance with ASTM C1303.
- B. Roof Sheathing:
 - 1. Type: ASTM C1177/C1177M; 48 inches wide x 1/2 inch thick, maximum practical length, square cut ends and edges.
 - 2. Mold resistance: 10, tested to ASTM D3273.
 - 3. Recycled content: Minimum 90 percent.

2.3 ACCESSORIES

- A. Fasteners: Hot-dip galvanized or fluoropolymer coated steel, type and length suited to project conditions, with galvanized steel plates.

PART 3 EXECUTION

3.1 INSTALLATION OF INSULATION

- A. Apply base layer with long edges continuous and perpendicular to deck ribs.

- B. Stagger end joints in adjacent rows.
- C. Locate ends over solid bearing.
- D. Apply top layer with long edges perpendicular to those of base layer, with joints staggered in adjacent rows. Offset joints from those in base layer.
- E. Leave 1/4 inch expansion space at panel ends and edges.
- F. Mechanically fasten to substrate in manufacturer's recommended fastening pattern.
- G. Fit insulation to other boards and at perimeter and around penetrations with maximum 3/8 inch voids.

3.2 INSTALLATION OF ROOF SHEATHING

- A. Apply panels with long edges continuous and perpendicular to direction of insulation.] Stagger end joints in adjacent rows. Offset joints from those in insulation.
- B. Mechanically fasten to substrate in manufacturer's recommended fastening pattern.
- C. Fit sheathing to other boards and at perimeter and around penetrations with maximum 3/8 inch voids.

3.3 TOLERANCES

- A. Surface Flatness of Insulation: Plus or minus 1/4 inch in 10 feet maximum.

END OF SECTION

SECTION 07272 - FLUID-APPLIED MEMBRANE AIR BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Fluid-applied membrane air barrier, vapor retarding.

1.2 PERFORMANCE REQUIREMENTS

- A. General: Air barrier shall be capable of performing as a continuous vapor-**retarding** air barrier **and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration.** Air barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated
- B. Product certificates.
- C. Qualification data.
- D. Product test reports.

1.4 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm experienced in applying air barrier materials similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Mockups: Before beginning installation of air barrier, build mockups of exterior wall assembly **150 sq. ft. (14 sq. m)**, incorporating backup wall construction, external cladding, window, door frame and sill, insulation, and flashing to demonstrate surface preparation, crack and joint treatment, and sealing of gaps, terminations, and penetrations of air barrier membrane.
 - 1. Include junction with **foundation wall intersection.**

PART 2 - PRODUCTS

2.1 FLUID-APPLIED MEMBRANE AIR BARRIER

- A. Fluid-Applied, Vapor-Retarding Membrane Air Barrier: **synthetic polymer** membrane.
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Synthetic Polymer Membrane:
 - 1) Grace, W. R. & Co.; Perm-A-Barrier Liquid.
 - 2) Henry Company; Air-Bloc **21 or 21S**.
 - 3) Rubber Polymer Corporation; Rub-R-Wall Airtight.
 2. Physical and Performance Properties:
 - a. Membrane Air Permeance: Not to exceed 0.004 cfm x sq. ft. of surface area at 1.57-lbf/sq. ft. (0.02 L/s x sq. m of surface area at 75-Pa) pressure difference; ASTM E 2178.
 - b. Membrane Vapor Permeance: Not to exceed 0.1 perm (5.8 ng/Pa x s x sq. m) ; ASTM E 96.

2.2 AUXILIARY MATERIALS

- A. General: Auxiliary materials recommended by air barrier manufacturer for intended use and compatible with air barrier membrane. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
- B. Primer: Liquid **waterborne** primer recommended for substrate by manufacturer of air barrier material.
- C. Butyl Strip: Vapor-retarding, 30- to 40-mil- (0.76- to 1.0-mm-) thick, self-adhering; polyethylene-film-reinforced top surface laminated to layer of butyl adhesive with release liner backing.
- D. Joint Reinforcing Strip: Air barrier manufacturer's glass-fiber-mesh tape.
- E. Substrate Patching Membrane: Manufacturer's standard trowel-grade substrate filler.
- F. Sprayed Polyurethane Foam Sealant: 1- or 2-component, foamed-in-place, polyurethane foam sealant, 1.5 to 2.0 lb/cu. ft (24 to 32 kg/cu. m) density; flame spread index of 25 or less according to ASTM E 162; with primer and noncorrosive substrate cleaner recommended by foam sealant manufacturer.

- G. Adhesive-Coated Transition Strip: Vapor-permeable, 17-mil- (0.43-mm-) thick, self-adhering strip consisting of an adhesive coating over a permeable laminate with a permeance of 37 perms (2145 ng/Pa x s x sq. m).
- H. Joint Sealant: ASTM C 920, single-component, neutral-curing silicone; Class 100/50 (low-modulus), Grade NS, Use NT related to exposure, and, as applicable to joint substrates indicated, Use O. Comply with Division 7 Section "Joint Sealants."

PART 3 - EXECUTION

3.1 JOINT TREATMENT

- A. Concrete and Masonry: Prepare, treat, rout, and fill joints and cracks in substrate according to ASTM C 1193 and air barrier manufacturer's written instructions.
- B. Gypsum Sheathing: Fill joints greater than 1/4 inch (6 mm) with sealant according to ASTM C 1193 and with air barrier manufacturer's written instructions. Apply first layer of fluid air barrier membrane at joints. Tape joints with joint reinforcing strip after first layer is dry. Apply a second layer of fluid air barrier membrane over joint reinforcing strip.

3.2 TRANSITION STRIP INSTALLATION

- A. Install strips, transition strips, and auxiliary materials according to air barrier manufacturer's written instructions to form a seal with adjacent construction and maintain a continuous air barrier.
 - 1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
 - 2. Install **modified bituminous**] strip on roofing membrane or base flashing so that a minimum of 3 inches (75 mm) of coverage is achieved over both substrates.
- B. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by air barrier sheet in same day. Reprime areas exposed for more than 24 hours.
 - 1. Prime glass-fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.
- C. Connect and seal exterior wall air barrier membrane continuously to roofing membrane air barrier, concrete below-grade structures, floor-to floor

construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials .

- D. At end of each working day, seal top edge of strips and transition strips to substrate with termination mastic.
- E. Apply joint sealants forming part of air barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Wall Openings: Prime concealed perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply **adhesive-coated transition strip** so that a minimum of **3 inches (75 mm)** of coverage is achieved over both substrates. Maintain **3 inches (75 mm)** of full contact over firm bearing to perimeter frames with not less than **1 inch (25 mm)** of full contact.
- G. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air barrier membrane with foam sealant.
- H. Seal strips and transition strips around masonry reinforcing or ties and penetrations with termination mastic.
- I. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.
- J. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending **6 inches (150 mm)** beyond repaired areas in strip direction.

3.3 AIR BARRIER MEMBRANE INSTALLATION

- A. Clean, prepare, treat, and seal substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air barrier application.
- B. Apply air barrier membrane to form a seal with strips and transition strips and to achieve a continuous air barrier according to air barrier manufacturer's written instructions.
- C. Apply air barrier membrane within manufacturer's recommended application temperature ranges.
- D. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by air barrier sheet in same day. Reprime areas exposed for more than 24 hours.

1. Prime glass-fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.
- E. Apply a continuous unbroken air barrier to substrates according to the following minimum thickness. Apply membrane in full contact around protrusions such as masonry ties.
 1. Vapor-Retarding Membrane Air Barrier: **40-mil (1.0-mm)** dry film thickness.
- F. Apply **strip and transition strip a minimum of 1 inch (25 mm) onto cured air membrane or strip and transition strip over cured air membrane overlapping 3 inches (75 mm) onto each surface** according to air barrier manufacturer's written instructions.
- G. Do not cover air barrier until it has been tested and inspected by Owner's testing agency.
- H. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air barrier components.

3.4 PROTECTION

- A. Protect air barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
 1. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer. Remove and replace air barrier exposed for more than **60** days.

END OF SECTION 07272

SECTION 07411 - METAL ROOF AND WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Standing-seam metal roof and wall panels.
 - 2. Metal soffit panels.
- B. Related Sections:

1.2 PERFORMANCE REQUIREMENTS

- A. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E 2140.
- B. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
 - 1. To meet wind loads as indicated in structural drawings for "Components and Cladding" and "Roof Net Uplift Diagram".
 - 2. Wind Loads: Determine loads based on the following minimum design wind pressures:
 - a. Structural Drawings table for "Components and Cladding" and "Roof Net Uplift Diagram".
 - 3. Deflection Limits: Metal roof panel assemblies shall withstand wind and snow loads with vertical deflections no greater than **1/180** of the span.
- C. Energy Performance: Provide roof panels with solar reflectance index not less than **78** when calculated according to ASTM E 1980 based on testing identical products by a qualified testing agency.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. LEED Submittals:
 - 1. Product Test Reports for Credit SS 7.2: For roof panels, indicating that panels comply with solar reflectance index requirement.
 - 2. Product Data for Credit MR 4.1 **and Credit MR 4.2**: Indicating percentages by weight of postconsumer and preconsumer recycled content for products having recycled content.

- a. Include statement indicating costs for each product having recycled content.
 - C. Shop Drawings: Show fabrication and installation layouts of metal roof panels; details of edge conditions, side-seam and endlap joints, panel profiles, corners, anchorages, trim, flashings, closures, and accessories; and special details. Distinguish between factory- and field-assembled work.
 - D. Samples: For each type of exposed finish required.
 - E. Delegated-Design Submittal: For metal roof panel assembly indicated to comply with performance requirements and design criteria, including analysis data and calculations signed and sealed by the qualified professional engineer responsible for their preparation.
 - F. Coordination Drawings: Roof plans, drawn to scale, based on input from installers of the items involved.
 - G. Manufacturer Certificates: Signed by manufacturer certifying that roof panels comply with energy performance requirements specified in "Performance Requirements" Article.
 - 1. Submit evidence of meeting performance requirements.
 - H. Product test reports.
 - I. Maintenance data.
 - J. Warranties: Samples of special warranties.
- 1.4 QUALITY ASSURANCE
- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.
 - B. Preinstallation Conference: Conduct conference at **Project site**.
- 1.5 WARRANTY
- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace metal roof panel assemblies that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five (5) years from date of Substantial Completion.
 - B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal roof panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: **20** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PANEL MATERIALS

- A. Metallic-Coated Steel Sheet: Restricted flatness steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
 1. Recycled Content: Provide steel sheet with average recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content is not less than **25** percent.
 2. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, **Class AZ50 coating designation, Grade 40** (Class AZM150 coating designation, Grade 275); structural quality.
 3. Surface: **Smooth, flat** finish.
 4. Exposed Coil-Coated Finish:
 - a. 3-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat.
 5. Concealed Finish: Manufacturer's standard white or light-colored acrylic or polyester backer finish.
- B. Panel Sealants:
 1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing; **1/2 inch (13 mm)** wide and **1/8 inch (3 mm)** thick.
 2. Joint Sealant: ASTM C 920; as recommended in writing by metal roof panel manufacturer.
 3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.2 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Sheet: **30 to 40 mils (0.76 to 1.0 mm)** thick minimum, consisting of slip-resisting, polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
 1. Thermal Stability: Stable after testing at **240 deg F (116 deg C)**; ASTM D 1970.
 2. Low-Temperature Flexibility: Passes after testing at minus **20 deg F (29 deg C)**; ASTM D 1970.
 3. Products: Subject to compliance with requirements, **available products that may be incorporated into the Work include, but are not limited to, the following:**

- a. Carlisle Coatings & Waterproofing Inc., Div. of Carlisle Companies Inc.; CCW WIP 300HT.
- b. Grace Construction Products; a unit of Grace, W. R. & Co.; Ultra.
- c. Henry Company; Blueskin PE200 HT.
- d. Metal-Fab Manufacturing, LLC; MetShield.
- e. Owens Corning; WeatherLock Metal High Temperature Underlayment.

B. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

2.3 SUBSTRATE BOARDS

- A. Glass-Mat Gypsum Sheathing Board: ASTM C 1177/C 1177M; **Regular, 1/2 inch (13 mm)**.
- B. Substrate-Board Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FMG 4470, designed for fastening substrate board to substrate.

2.4 MISCELLANEOUS METAL FRAMING

- A. Miscellaneous Metal Framing, General: ASTM C 645, cold-formed metallic-coated steel sheet, **ASTM A 653/A 653M, G60 (Z180) hot-dip galvanized** or coating with equivalent corrosion resistance unless otherwise indicated.
- B. Z-Shaped Furring: With slotted or nonslotted web, face flange of **1-1/4 inches (32 mm)**, wall attachment flange of **7/8 inch (22 mm)**, and depth required to fit insulation thickness indicated.
 - 1. Nominal Thickness: **As required to meet performance requirements.**

2.5 MISCELLANEOUS MATERIALS

- A. Panel Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide exposed fasteners with heads matching color of metal roof panels by means of plastic caps or factory-applied coating. Provide EPDM, PVC, or neoprene sealing washers.
- B. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for **15-mil (0.4-mm)** dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.6 STANDING-SEAM METAL ROOF PANELS

- A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and

mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.
2. Manufacturers: Subject to compliance with requirements, **manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
 - a. AEP-Span.
 - b. Architectural Building Components.
 - c. Architectural Metal Systems.
 - d. Architectural Roofing and Siding, Inc.
 - e. ATAS International, Inc.
 - f. Berridge Manufacturing Company.
 - g. Butler Manufacturing; a BlueScope Steel company.
 - h. CENTRIA Architectural Systems.
 - i. Copper Sales, Inc.
 - j. Dimensional Metals, Inc.
 - k. Fabral.
 - l. Flexospan Steel Buildings, Inc.
 - m. Galvamet; Galvacer Building Systems.
 - n. IMETCO.
 - o. Integris Metals.
 - p. MBCI; a division of NCI Building Systems, L. P.
 - q. McElroy Metal, Inc.
 - r. Metal-Fab Manufacturing, LLC.
 - s. Metal Sales Manufacturing Corporation.
 - t. Metecno-Morin; Division of Metecno Inc.
 - u. Modern Metal Systems, Inc.
 - v. Petersen Aluminum Corporation.
 - w. Steelox Systems, L.L.C.
 - x. Ultra Seam Incorporated.
 - y. United Steel Deck Inc.; Subsidiary of Bouras Industries Inc.
 - z. VICWEST; Div. of Jenisys Engineered Products.
3. Profile: **Vertical-rib, seamed**-joint, as indicated on Drawings.
4. Material: Aluminum-zinc alloy-coated steel sheet, thickness as required to meet specified loads.
 - a. Exterior Finish: **3-coat fluoropolymer.**
 - b. Color: **As selected by Architect from manufacturer's full range.**
5. Clips: **Floating to accommodate thermal movement.**
 - a. Material: **Metallic coated steel.**
6. Joint Type: **As standard with manufacturer.**
7. Panel Coverage: 16".
8. Panel Height: **As standard with manufacturer.**

2.7 METAL SOFFIT PANELS

- A. General: Provide factory-formed metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners **and factory-applied sealant** in side laps. Include accessories required for weathertight installation.
- B. Metal Soffit Panels: Match profile and material of metal roof panels.
 - 1. Finish: **Match finish and color of metal roof panels.**
 - 2. Sealant: Factory applied within interlocking joint.
 - 3. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
 - a. AEP-Span.
 - b. Architectural Building Components.
 - c. ATAS International, Inc.
 - d. Berridge Manufacturing Company.
 - e. CENTRIA Architectural Systems.
 - f. Cheney Flashing Company.
 - g. Copper Sales, Inc.
 - h. Dimensional Metals, Inc.
 - i. Englert, Inc.
 - j. Fabral.
 - k. IMETCO.
 - l. MBCI; a division of NCI Building Systems, L. P.
 - m. McElroy Metal, Inc.
 - n. Merchant & Evans.
 - o. Metal-Fab Manufacturing, LLC.
 - p. Metal Sales Manufacturing Corporation.
 - q. Petersen Aluminum Corporation.
 - r. Ultra Seam Incorporated.
 - 4. Profile: **Flush** as indicated on Drawings.
 - 5. Material: Same material, finish, and color as metal roof panels.
 - 6. Material: Aluminum-zinc alloy-coated steel sheet, thickness as required to meet design loads.
 - a. Exterior Finish: **3-coat fluoropolymer.**
 - b. Color: **Match finish and color of metal roof panels.**
 - 7. Panel Coverage: **12 inches (305 mm).**
 - 8. Panel Height: **As standard with manufacturer .**
 - 9. Sealant: Factory applied within interlocking joint.

2.8 ACCESSORIES

- A. Roof Panel Accessories: Provide components approved by roof panel manufacturer and as required for a complete metal roof panel assembly including trim, copings, fasciae, corner units, ridge closures, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.
1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal roof panels.
 2. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum ~~1-inch-~~ (25-mm-) thick, flexible closure strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
 3. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
- B. Flashing and Trim: Formed from same material as roof panels, prepainted with coil coating. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal roof panels. All flashing and trim shall be fabricated in accordance with SMACNA requirements.

2.9 FABRICATION

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

PART 3 - EXECUTION

3.1 PREPARATION

- A. Substrate Board: Install substrate boards over roof **deck** on entire roof surface. Attach with substrate-board fasteners.
 - 1. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.
- B. Miscellaneous Framing: Install subpurlins, eave angles, furring, and other miscellaneous roof panel support members and anchorage according to metal roof panel manufacturer's written instructions.

3.2 UNDERLAYMENT INSTALLATION

- A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated on Drawings, wrinkle free, in shingle fashion to shed water, and with end laps of not less than **6 inches (150 mm)** staggered **24 inches (600 mm)** between courses. Overlap side edges not less than **3-1/2 inches (90 mm)**. Roll laps with roller. Cover underlayment within 14 days.
- B. Apply slip sheet over underlayment before installing metal roof panels.
- C. Install flashings to cover underlayment to comply with requirements specified in Division 7 Section "Sheet Metal Flashing and Trim."

3.3 METAL ROOF AND WALL PANEL INSTALLATION

- A. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended by manufacturer.
 - 1. Install clips to supports with self-tapping fasteners.
 - 2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
 - 3. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
- B. Metal Soffit Panels: Provide metal soffit panels full width of soffits. Install panels perpendicular to support framing.
 - 1. Flash and seal panels with weather closures where metal soffit panels meet walls and at perimeter of all openings.

3.4 ACCESSORY INSTALLATION

- A. General: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
 - 1. Install components required for a complete metal roof panel assembly including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
 - 2. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
 - 3. Provide elbows at base of downspouts to direct water away from building.

3.5 CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as metal roof panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal roof panel installation, clean finished surfaces as recommended by metal roof panel manufacturer. Maintain in a clean condition during construction.

END OF SECTION 07411

SECTION 07540 - THERMOPLASTIC MEMBRANE ROOFING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Rigid roof insulation.
 - 2. Roof sheathing.
 - 3. Fully adhered single ply membrane roofing.
 - 4. Base flashings.
 - 5. Expansion joint covers.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section 06100 - Rough Carpentry.
 - 3. Section 07620 - Sheet Metal Flashing and Trim.

1.2 REFERENCES

- A. American Society of Civil Engineers (ASCE) 7 - Minimum Design Loads for Buildings and Other Structures.
- B. ASTM International (ASTM):
 - 1. C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
 - 2. C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - 3. C1303 - Standard Test Method for Estimating the Long-Term Change in Thermal Resistance of Unfaced Rigid Closed Cell Plastic Foams by Slicing and Scaling Under Controlled Laboratory Conditions.
 - 4. C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
 - 5. D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
 - 6. D4434 - Standard Specification for Poly (Vinyl Chloride) Sheet Roofing.
 - 7. E108 - Standard Test Methods for Fire Tests of Roof Coverings.
 - 8. E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.
- C. National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual.

1.3 SYSTEM DESCRIPTION

- A. Design Requirements: Design roofing system to resist minimum wind loads in accordance with structural drawings "Net Roof Uplift Diagram".

1.4 SUBMITTALS

- A. Submittals for Review:

1. Shop Drawings: Indicate:
 - a. Setting plan for insulation.
 - b. Roof slopes.
 - c. Layout of seams.
 - d. Base flashing, termination, and special details.
 - e. Fastener types and locations.
2. Product Data: Manufacturer's product specifications, installation instructions, and general recommendations for each product.
3. Samples:
4. Warranty: Sample warranty form.

B. Sustainable Design Submittals:

1. Recycled Content.
2. Solar Reflectance Index.
3. Regional Materials.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications:
1. Minimum 10 years documented experience in work of this Section.
 2. Licensed or certified by roofing materials manufacturer.
- B. Roofing System:
1. Energy Star certified.
 2. Solar Reflectance Index: Minimum 78, tested to ASTM C1549 and calculated in accordance with ASTM E1980.
- C. Pre-Installation Conference:
1. Convene at site 2 weeks prior to beginning work of this Section.
 2. Attendance: Architect, Contractor, roofing applicator, roofing manufacturer's representative, and related trades.
 3. Review and discuss: Contract Documents, roofing system manufacturer's literature, project conditions, scheduling, and other matters affecting application.
 4. Tour representative areas of roofing substrates; discuss substrate construction, related work, work conditions, and materials compatibility.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Store materials, other than membrane, in protected, dry area, between 60 and 80 degrees F until used; provide proper ventilation.
- B. Protect sheet goods from damage and wetting.

1.7 PROJECT CONDITIONS

- A. Do not apply roofing to damp or frozen substrate.

- B. Do not apply roofing during inclement weather or at temperatures below 40 degrees F, or above 100 degrees F or if freezing weather is anticipated within 24 hours after application. Do not use frozen materials.

1.8 WARRANTIES

- A. Furnish manufacturer's 20 year warranty providing coverage against water leakage through roofing system.
 - 1. Make repairs to roofing system required due to defects in materials or workmanship resulting in water leakage into or through roofing system.
 - 2. Include cost of labor and materials necessary to make required repairs.
 - 3. Cover all roofing system components including roofing membrane, built-up and metal flashings, high wall waterproof flashings, roof insulation, expansion joint covers, and preflashed accessories.
 - 4. Not limited to specific dollar amount.
 - 5. Transferable to subsequent building owners during warranty period.
 - 6. Include coverage for wind speeds up to 120 MPH.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers - PVC Roofing System:
 - 1. Firestone Building Products Co. (www.firestonebpco.com)
 - 2. GAF Materials Corp. (www.gaf.com)
 - 3. Johns Manville. (www.jm.com)
 - 4. Sarnafil, Inc. (www.sarnafilus.com)
- B. Acceptable Manufacturers - Roof Sheathing:
 - 1. GP Gypsum Corporation. (www.gp.com)
- C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Rigid Insulation:
 - 1. Type: ASTM C1289, Type II, rigid polyisocyanurate faced both sides with glass fiber mat facings.
 - 2. Thermal resistance: Minimum R value of 15, calculated in accordance with ASTM C1303.
 - 3. Provide board tapered to 1/4 inch per foot.
- B. Roof Sheathing:
 - 1. Type: ASTM C1177/C1177M; 48 inches wide x 1/2 inch thick, maximum practical length, square cut ends and edges.
 - 2. Mold resistance: 10, tested to ASTM D3273.
 - 3. Recycled content: Minimum 90 percent.

- C. Roof Membrane:
 - 1. Type: ASTM D4434, plasticized polyvinyl chloride (PVC), ultraviolet resistant, reinforced.
 - 2. Size: Maximum sheet size permitted by application and job conditions.
 - 3. Thickness: 60 mils.
 - 4. Color: White.
- D. Flashing Sheet: Manufacturer's standard flashing sheet, color to match membrane.

2.3 ACCESSORIES

- A. Accessories: By manufacturer of roofing system, including adhesives, tapes, solvents, sealants, water cutoff mastic, and prefabricated pipe flashings.
- B. Fasteners: Hot-dip galvanized or fluoropolymer coated steel, approved by roofing system manufacturer, type and length suited to project conditions.
- C. Insulation Fasteners: Hot-dip galvanized or fluoropolymer coated steel, approved by roofing system manufacturer, type and length suited to project conditions, with galvanized steel plates.
- D. Expansion Joint Covers:
 - 1. Type: Manufacturer's standard.
 - 2. .
- E. Nailers and Curbs:
 - 1. Preservative treated wood, specified in Section 06100.
 - 2. Nailers: As indicated on drawings x insulation thickness.
- F. Metal Flashings: Minimum 24 gage sheet metal laminated with PVC membrane.

PART 3 EXECUTION

3.1 PREPARATION

- A. Remove projections that could puncture membrane from substrate.
- B. Clean substrate of loose and foreign material, oil, and grease.
- C. Complete roof penetrations and preparation for drains, flashings, and other penetrations prior to beginning roofing.
- D. Protect adjacent and underlying surfaces.

3.2 INSTALLATION - GENERAL

- A. Install roofing system in accordance with roofing system manufacturer's instructions, NRCA Manual, and approved Shop Drawings.

3.3 INSTALLATION OF INSULATION

- A. Apply base layer with long edges continuous and perpendicular to deck ribs. Stagger end joints in adjacent rows.
- B. Apply top layer with long edges perpendicular to those of base layer, with joints staggered in adjacent rows. Offset joints from those in base layer.
- C. Mechanically fasten to substrate in manufacturer's recommended fastening pattern.
- D. Fit insulation to other boards and at perimeter and around penetrations with maximum 3/8 inch voids.

3.4 INSTALLATION OF ROOF SHEATHING

- A. Apply panels with long edges continuous and perpendicular to direction of insulation. Stagger end joints in adjacent rows. Offset joints from those in insulation.
- B. Mechanically fasten to substrate in manufacturer's recommended fastening pattern.
- C. Fit sheathing to other boards and at perimeter and around penetrations with maximum 3/8 inch voids.

3.5 INSTALLATION OF ROOF MEMBRANE

- A. Position sheets without stretching; minimize wrinkles. Allow membrane to relax before proceeding.
- B. Provide minimum 5-1/2 inch lap at joints between adjacent sheets.
- C. Splice sheets by manufacturer's standard (solvent welding or heat welding) method.
- D. Bond membrane to substrate with full adhesive bed.
- E. Fasten membrane to perimeter nailers with fasteners spaced 6 inches on center maximum.
- F. Daily Seal:
 - 1. Ensure that water does not flow beneath completed sections of roof.
 - 2. Temporarily seal loose edge of membrane with night seal when weather is threatening.
 - 3. When work is resumed, pull sheet free before continuing installation.

3.6 INSTALLATION OF FLASHINGS

- A. Construct in accordance with roofing system manufacturer's standard details.

- B. Juncture of Horizontal and Vertical Surfaces:
 - 1. Use longest practical length flashing to minimize joints.
 - 2. Complete splice between flashing and main roof sheet before bonding flashing to vertical surface. Extend splice 3 inches beyond fasteners that attach membrane to horizontal surface.
 - 3. Adhere flashing to substrate with full bed of adhesive.
 - 4. Fasten top of flashing at 12 inches on center maximum, under metal flashing.
- C. Penetrations through Membrane:
 - 1. Flash pipe with premolded pipe flashings wherever possible.
 - 2. Where molded pipe flashings cannot be installed, use field fabricated pipe seals.
 - 3. Seal clusters of pipes and unusually shaped penetrations with minimum 2 inch high flashing containing pourable sealer.
- D. Expansion Joints:
 - 1. Complete roof membrane and flashing installation prior to installing expansion joint.
 - 2. Set joint cover on top of wood nailers; secure on each side through metal flange.
 - 3. Seal joint cover flanges to membrane as for sheet splice.
- E. Roof Drains:
 - 1. Taper insulation around drain to provide smooth transition from roof surface to drain clamping ring.
 - 2. Seal between membrane and drain base with water cutoff mastic.

END OF SECTION

SECTION 07620 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes sheet metal flashing and trim in the following categories:
 - 1. Exposed trim, gravel stops, and fasciae.
 - 2. Metal flashing.
 - 3. Roof expansion-joint covers.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 4 Sections for through-wall flashing and other integral masonry flashings specified as part of masonry work.
 - 2. Division 5 Section "Expansion Joint Cover Assemblies" for metal expansion-joint covers.
 - 3. Division 7 Section "Roof Accessories" for set-on-type curbs, equipment supports, roof hatches, vents, and other manufactured roof accessory units.
 - 4. Division 7 Section "Joint Sealants" for elastomeric sealants.
 - 5. Division 7 Roofing Sections for flashing and roofing accessories installed integral with roofing membrane as part of roofing-system work.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing.

1.4 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data including manufacturer's material and finish data, installation instructions, and general recommendations for each specified flashing material and fabricated product.
 - 1. square Samples of specified sheet materials to be exposed as finished surfaces.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experience Installer who has completed sheet metal flashing and trim work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

1.6 PROJECT CONDITIONS

- A. Coordinate Work of this Section with interfacing and adjoining Work for proper sequencing of each installation. Ensure best possible weather resistance, durability of Work, and protection of materials and finishes.

PART 2 - PRODUCTS

2.1 METALS

- A. Flashing and other metals to match wall and roof panels. Thickness to meet SMACNA and wind load requirements.

2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Fasteners: Same metal as sheet metal flashing or other noncorrosive metal as recommended by sheet metal manufacturer. Match finish of exposed heads with material being fastened.
- B. Asphalt Mastic: SSPC-Paint 12, solvent-type asphalt mastic, nominally free of sulfur and containing no asbestos fibers, compounded for dry film thickness per coat.
- C. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.
- D. Elastomeric Sealant: Generic type recommended by sheet metal manufacturer and fabricator of components being sealed and complying with requirements for joint sealants as specified in Division 7 Section "Joint Sealants."
- E. Epoxy Seam Sealer: 2-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior and interior nonmoving joints, including riveted joints.
- F. Adhesives: Type recommended by flashing sheet metal manufacturer for waterproof and weather-resistant seaming and adhesive application of flashing sheet metal.
- G. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed; noncorrosive; size and thickness required for performance.

2.3 FABRICATION, GENERAL

- A. Sheet Metal Fabrication Standard: Fabricate sheet metal flashing and trim to comply with recommendations of SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of the item indicated.
- B. Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Form exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems.

- D. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
- E. Expansion Provisions: Space movement joints at maximum of with no joints allowed within of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than deep, filled with mastic sealant (concealed within joints).
- F. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
- G. Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent separation as recommended by manufacturer.
- H. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.
- I. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, noncorrosive metal recommended by sheet metal manufacturer.
 - 1. Size: As recommended by SMACNA manual or sheet metal manufacturer for application but never less than thickness of metal being secured.

2.4 COIL-COATED GALVANIZED STEEL SHEET FINISH

- A. High-Performance Organic Coating Finish: Apply the following system by coil-coating process on galvanized steel sheet as recommended by coating manufacturers and applicator.
 - 1. Fluoropolymer 2-Coat Coating System: Manufacturer's standard 2-coat, thermocured system composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 605.2.
 - a. Color and Gloss: Match aluminum composite panel finish.
 - b. Resin Manufacturers: Subject to compliance with requirements, provide fluoropolymer coating systems containing resins produced by one of the following manufacturers:
 - 1) Ausimont USA, Inc. (Hylar 5000)
 - 2) Elf Atochem North America, Inc. (Kynar 500)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions under which sheet metal flashing and trim are to be installed and verify that Work may properly commence. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer's installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Anchor units of Work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weatherproof.
- B. Install exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Roof-Edge Flashings: Secure metal flashings at roof edges according to FM Loss Prevention Data Sheet 1-49 for specified wind zone.
- D. Expansion Provisions: Provide for thermal expansion of exposed sheet metal Work. Space movement joints at maximum of with no joints allowed within of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than deep, filled with mastic sealant (concealed within joints).
 - 1. Do not solder the following metals:
 - a. Aluminum.
 - b. Coil-coated galvanized steel sheet.
- E. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.
 - 1. Use joint adhesive for nonmoving joints specified not to be soldered.
- F. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
- G. Separations: Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.
 - 1. Underlayment: Where installing stainless steel or aluminum directly on cementitious or wood substrates, install a slip sheet of red-rosin paper and a course of polyethylene underlayment.
 - 2. Bed flanges of Work in a thick coat of roofing cement where required for waterproof performance.
- H. Counterflashings: Coordinate installation of counterflashings with installation of assemblies to be protected by counterflashing. Install counterflashings in reglets or receivers. Secure in a waterproof manner by means of snap-in installation and sealant, lead wedges and sealant, interlocking folded seam, or blind rivets and sealant. Lap counterflashing joints a minimum of and bed with sealant.
- I. Equipment Support Flashing: Coordinate equipment support flashing installation with roofing and equipment installation. Weld or seal flashing to equipment support member.

- J. Roof-Penetration Flashing: Coordinate roof-penetration flashing installation with roofing and installation of items penetrating roof. Install flashing as follows:
 - 1. Seal and clamp flashing to pipes penetrating roof, other than lead flashing on vent piping.

3.3 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
- B. Provide final protection and maintain conditions that ensure sheet metal flashing and trim Work during construction is without damage or deterioration other than natural weathering at the time of Substantial Completion.

END OF SECTION 07620

SECTION 07920 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes sealants for the following:
 - 1. Exterior joints in vertical surfaces and nontraffic horizontal surfaces.
 - 2. Exterior joints in horizontal traffic surfaces.
 - 3. Interior joints in vertical surfaces and horizontal nontraffic surfaces.
- B. See Division 8 Section "Glazing" for glazing sealants.
- C. See Division 1 for LEED requirements.

1.2 SUBMITTALS

- A. Product Data: For each joint sealant product indicated.
- B. Samples: For each joint sealant product indicated.
- C. Sealant compatibility and adhesion test reports.

1.3 QUALITY ASSURANCE

- A. Sealant Compatibility and Adhesion Testing: Use sealant manufacturer's standard test methods to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.

1.4 WARRANTY

- A. Special Installer's Warranty: Written warranty in which Installer agrees to repair or replace elastomeric joint sealants that do not meet requirements specified in this Section or fail in adhesion within specified warranty period five years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with requirements specified in this Section within 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.

2.2 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected.

2.3 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealants, General: ASTM C 920.

- B. Mildew-Resistant Silicone Sealant:

1. Available Products:
 - a. Dow Corning; 786 Mildew Resistant.
 - b. GE Silicones; Sanitary 1700.
 - c. NUCO Industries, Inc.; NuFlex 302.
 - d. Pecora Corporation; 898 Silicone Sanitary Sealant.
 - e. Polymeric Systems, Inc.; PSI-611.
 - f. Tremco; Tremsil 600 White.
2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Exposure: Use NT (nontraffic).
5. Substrates: Uses G, A, and, as applicable to joint substrates indicated, O.

- C. Multicomponent Nonsag Urethane Sealant:

1. For joints not subject to traffic and requiring additional movement capability, provide the following:
 - a. Available Products:
 - 1) Mameco International; Vulkem 922.
 - 2) Pecora Corporation; Dynatrol II.
 - 3) Polymeric Systems, Inc.; Flexiprene 2000.
 - 4) Sika Corporation; Sikaflex - 2c NS.
 - 5) Tremco; DYmeric 511.
 - b. Type and Grade: M (multicomponent) and NS (nonsag).
 - c. Class: 25.
 - d. Additional Movement Capability: 50 percent movement in extension and 50 percent in compression when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719.

- e. Exposure: Use NT (nontraffic).
- f. Substrates: M,[G,] A, and, as applicable to joint substrates indicated, O.

D. Multicomponent Pourable Urethane Sealant:

1. Available Products:

- a. Bostik Inc.; Chem-Calk 550.
- b. Mameco International; Vulkem 245.
- c. Meadows, W. R., Inc.; Pourthane.
- d. Pacific Polymers, Inc.; Elasto-Thane 920 Pourable.
- e. Pecora Corporation; NR-200 Urexpan.
- f. Polymeric Systems, Inc.; PSI-270SL.
- g. Sika Corporation; Sikaflex - 2c SL.
- h. Sonneborn Building Products Div., ChemRex Inc.; SL 2.
- i. Tremco; THC-900.

- 2. Type and Grade: M (multicomponent) and P (pourable).
- 3. Class: 25.
- 4. Exposure: Use NT (nontraffic).
- 5. Substrates: Uses M,G, A, and, as applicable to joint substrates indicated, O.

2.4 SOLVENT-RELEASE JOINT SEALANTS

A. Butyl-Rubber-Based Solvent-Release Joint Sealant: ASTM C 1085.

1. Available Products:

- a. Bostik Inc.; Bostik 300.
- b. H.B. Fuller Company; PTI 707
- c. NUCO Industries, Inc.; NuFlex 232.
- d. Pecora Corporation; BC-158.
- e. Polymeric Systems, Inc.; PSI-301.
- f. Sonneborn Building Products Div., ChemRex, Inc.; Sonneborn Multi-Purpose Sealant.
- g. Tremco; Tremco Butyl Sealant.

2.5 LATEX JOINT SEALANTS

A. Latex Sealant: ASTM C 834.

1. Available Products:

- a. Bostik Inc.; Chem-Calk 600.
- b. NUCO Industries, Inc.; NuFlex 330.
- c. Ohio Sealants, Inc.; LC 160 All Purpose Acrylic Caulk.
- d. Pecora Corporation; AC-20.
- e. Polymeric Systems, Inc.; PSI-701.
- f. Sonneborn Building Products Div., ChemRex, Inc.; Sonolac.
- g. Tremco; Tremflex 834.

2.6 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - 1. Available Products:
 - a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
 - b. USG Corp., United States Gypsum Co.; SHEETROCK Acoustical Sealant.

2.7 PREFORMED JOINT SEALANTS

2.8 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type 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:
 - 1. Type: C (closed-cell material with a surface skin).
- C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.
- D. 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 where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.9 MISCELLANEOUS MATERIALS

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

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants.
 - 1. Remove foreign material from joint substrates that could interfere with adhesion of joint sealant.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues could interfere with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where recommended in writing by joint sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.
- D. Sealant Installation: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- E. Acoustical Sealant Installation: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.
- F. Install sealant backings to support sealants during application and at position required to produce optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- G. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and back of joints.
- H. Place sealants so they directly contact and fully wet joint substrates.
 - 1. Completely fill recesses provided for each joint configuration.
 - 2. Produce uniform, cross-sectional shapes and depths that allow optimum sealant movement capability.

- I. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealants from surfaces adjacent to joint.
 - 2. Use tooling agents that are approved by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Joint Configuration: Concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
- J. Clean excess sealants or sealant smears adjacent to joints as installation progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

END OF SECTION 07920

SECTION 08110 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:

1. Steel doors.
2. Steel door frames.
3. Sidelight frames
4. Borrowed-light frames.
5. Fire-rated door and frame assemblies.
6. Fire-rated window frames.
7. Louvers in doors.

- B. Related Sections include the following:

1. Division 4 Section "Unit Masonry Assemblies" for installing anchors and grouting frames in masonry construction.
2. Division 8 Section "Flush Wood Doors" for wood doors installed in steel frames.
3. Division 8 Section "Door Hardware " for door hardware and weather stripping.
4. Division 8 Section "Glazing" for glass in glazed openings in doors and frames.
5. Division 9 Section "Gypsum Board Assemblies" for spot-grouting frames installed in steel-framed gypsum board partitions.
6. Division 9 Section "Painting" for field painting factory-primed doors and frames.

1.3 DEFINITIONS

- A. Steel Sheet Thicknesses: Thickness dimensions, including those referenced in ANSI A250.8, are minimums as defined in referenced ASTM standards for both uncoated steel sheet and the uncoated base metal of metallic-coated steel sheets.

1.4 SUBMITTALS

- A. Product Data: For each type of door and frame indicated, include door designation, type, level and model, material description, core description, construction details, label compliance, sound and fire-resistance ratings, and finishes.
- B. Shop Drawings: Show the following:
 1. Elevations of each door design.
 2. Details of doors including vertical and horizontal edge details.
 3. Frame details for each frame type including dimensioned profiles.

4. Details and locations of reinforcement and preparations for hardware.
 5. Details of each different wall opening condition.
 6. Details of anchorages, accessories, joints, and connections.
 7. Coordination of glazing frames and stops with glass and glazing requirements.
- C. Door Schedule: Use same reference designations indicated on Drawings in preparing schedule for doors and frames.

1.5 QUALITY ASSURANCE

- A. Steel Door and Frame Standard: Comply with ANSI A 250.8, unless more stringent requirements are indicated.
- B. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252.
1. Test Pressure: Test at atmospheric pressure.
 2. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a testing agency acceptable to authorities having jurisdiction that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.
 3. Temperature-Rise Rating: Where indicated, provide doors that have a temperature-rise rating of 450 deg F maximum in 30 minutes of fire exposure.
- C. Fire-Rated Window Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 257.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.
- B. Inspect doors and frames on delivery for damage, and notify shipper and supplier if damage is found. Minor damages may be repaired provided refinished items match new work and are acceptable to Architect. Remove and replace damaged items that cannot be repaired as directed.
- C. Store doors and frames at building site under cover. Place units on minimum 4-inch- high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber. If door packaging becomes wet, remove cartons immediately. Provide minimum 1/4-inch spaces between stacked doors to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Steel Doors and Frames:

- a. Amweld Building Products, Inc.
- b. Benchmark Commercial Doors; a division of General Products Co., Inc.
- c. Ceco Door Products; a United Dominion Company.
- d. Copco Door Co.
- e. Curries Company.
- f. Deansteel Manufacturing, Inc.
- g. Kewanee Corporation (The).
- h. Mesker Door, Inc.
- i. Pioneer Industries Inc.
- j. Republic Builders Products.
- k. Steelcraft; a division of Ingersoll-Rand.

2.2 MATERIALS

- A. Hot-Rolled Steel Sheets: ASTM A 569/A 569M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- B. Cold-Rolled Steel Sheets: ASTM A 366/A 366M, Commercial Steel (CS), or ASTM A 620/A 620M, Drawing Steel (DS), Type B; stretcher-leveled standard of flatness.
- C. Metallic-Coated Steel Sheets: ASTM A 653/A 653M, Commercial Steel (CS), Type B, with an A40 zinc-iron-alloy (galvannealed) coating; stretcher-leveled standard of flatness.
- D. Electrolytic Zinc-Coated Steel Sheet: ASTM A 591/A 591M, Commercial Steel (CS), Class B coating; mill phosphatized; suitable for unexposed applications; stretcher-leveled standard of flatness where used for face sheets.

2.3 DOORS

- A. General: Provide doors of sizes, thicknesses, and designs indicated.
- B. Interior Doors: Provide doors complying with requirements indicated below by referencing ANSI 250.8 for level and model and ANSI A250.4 for physical-endurance level:
 1. Level 1 and Physical Performance Level C, (Standard Duty), Model 1 (Full Flush).
- C. Exterior Doors: Provide doors complying with requirements indicated below by referencing ANSI A250.8 for level and model and ANSI A250.4 for physical-endurance level:
 1. Level 2 and Physical Performance Level B (Heavy Duty), Model 1 (Full Flush).
- D. Door Louvers: Provide louvers for interior doors, where indicated, that comply with SDI 111C, with blades or baffles formed of 0.020-inch- thick, cold-rolled steel sheet set into 0.032-inch-thick steel frame.
 1. Sightproof Louvers: Stationary louvers constructed with inverted V-shaped or Y-shaped blades.
 2. Lightproof Louvers: Stationary louvers constructed with baffles to prevent light from passing from one side to the other, any angle.

- E. Vision Lite Systems: Manufacturer's standard kits consisting of glass lite moldings to accommodate glass thickness and size of vision lite indicated.

2.4 FRAMES

- A. General: Provide steel frames for doors, transoms, sidelights, borrowed lights, and other openings that comply with ANSI A250.8 and with details indicated for type and profile. Conceal fastenings, unless otherwise indicated.
- B. Frames of 0.042-inch- thick steel sheet for:
 - 1. Wood doors .
- C. Frames of 0.053-inch- thick steel sheet for:
 - 1. Level 2 steel doors.
- D. Door Silencers: Except on weather-stripped frames, fabricate stops to receive three silencers on strike jambs of single-door frames and two silencers on heads of double-door frames.
- E. Plaster Guards: Provide 0.016-inch- thick, steel sheet plaster guards or mortar boxes to close off interior of openings; place at back of hardware cutouts where mortar or other materials might obstruct hardware operation.
- F. Supports and Anchors: Fabricated from not less than 0.042-inch- thick, electrolytic zinc-coated or metallic-coated steel sheet.
 - 1. Wall Anchors in Masonry Construction: 0.177-inch- diameter, steel wire complying with ASTM A 510 may be used in place of steel sheet.
- G. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where zinc-coated items are to be built into exterior walls, comply with ASTM A 153/A 153M, Class C or D as applicable.

2.5 FABRICATION

- A. General: Fabricate steel door and frame units to comply with ANSI A250.8 and to be rigid, neat in appearance, and free from defects including warp and buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site.
- B. Exterior Door Construction: For exterior locations and elsewhere as indicated, fabricate doors, panels, and frames from metallic-coated steel sheet. Close top and bottom edges of doors flush as an integral part of door construction or by addition of 0.053-inch- thick, metallic-coated steel channels with channel webs placed even with top and bottom edges.
- C. Interior Door Faces: Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from the following material:
 - 1. Cold-rolled steel sheet.
 - 2. Metallic-coated steel sheet where indicated.
- D. Core Construction: Manufacturer's standard core construction that produces a door complying with SDI standards.

- E. Clearances for Non-Fire-Rated Doors: Not more than 1/8 inch at jambs and heads, except not more than 1/4 inch between pairs of doors. Not more than 3/4 inch at bottom.
- F. Clearances for Fire-Rated Doors: As required by NFPA 80.
- G. Single-Acting, Door-Edge Profile: Square edge.
- H. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
- I. Fabricate concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold- or hot-rolled steel sheet.
- J. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.
- K. Thermal-Rated (Insulating) Assemblies: At exterior locations and elsewhere as shown or scheduled, provide doors fabricated as thermal-insulating door and frame assemblies and tested according to ASTM C 236 or ASTM C 976 on fully operable door assemblies.
 - 1. Unless otherwise indicated, provide thermal-rated assemblies with U-value of 0.41 Btu/sq. ft. x h x deg F] or better.
- L. Sound-Rated (Acoustical) Assemblies: Where shown or scheduled, provide door and frame assemblies fabricated as sound-reducing type, tested according to ASTM E 1408, and classified according to ASTM E 413.
 - 1. Unless otherwise indicated, provide acoustical assemblies with STC sound ratings of 33 or better.
- M. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements in ANSI A250.6 and ANSI A115 Series specifications for door and frame preparation for hardware.
 - 1. For concealed overhead door closers, provide space, cutouts, reinforcement, and provisions for fastening in top rail of doors or head of frames, as applicable.
- N. Frame Construction: Fabricate frames to shape shown.
 - 1. Fabricate frames with mitered or coped and continuously welded corners .
 - 2. Provide welded frames with temporary spreader bars.
 - 3. Provide terminated stops where indicated.
- O. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site.
- P. Locate hardware as indicated on Shop Drawings or, if not indicated, according to ANSI A250.8.
- Q. Glazing Stops: Manufacturer's standard, formed from 0.032-inch- thick steel sheet.
 - 1. Provide nonremovable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.
 - 2. Provide screw-applied, removable, glazing stops on inside of glass, louvers, and other panels in doors.

- R. Astragals: As required by NFPA 80 to provide fire ratings indicated.

2.6 FINISHES

- A. Prime Finish: Manufacturer's standard, factory-applied coat of rust-inhibiting primer complying with ANSI A250.10 for acceptance criteria.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install steel doors, frames, and accessories according to Shop Drawings, manufacturer's data, and as specified.
- B. Placing Frames: Comply with provisions in SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
1. Place frames before construction of enclosing walls and ceilings.
 2. In masonry construction, provide at least three wall anchors per jamb; install adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Acceptable anchors include masonry wire anchors and masonry T-shaped anchors.
 3. In metal-stud partitions, provide at least three wall anchors per jamb; install adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Attach wall anchors to studs with screws.
 4. Install fire-rated frames according to NFPA 80.
- C. Door Installation: Comply with ANSI A250.8. Fit hollow-metal doors accurately in frames, within clearances specified in ANSI A250.8. Shim as necessary to comply with SDI 122 and ANSI/DHI A115.1G.
1. Fire-Rated Doors: Install within clearances specified in NFPA 80.
 2. Smoke-Control Doors: Install to comply with NFPA 105.

3.2 ADJUSTING AND CLEANING

- A. Prime-Coat Touchup: Immediately after installation, sand smooth any rusted or damaged areas of prime coat and apply touch up of compatible air-drying primer.
- B. Protection Removal: Immediately before final inspection, remove protective wrappings from doors and frames.

END OF SECTION 08110

SECTION 08211 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Factory finishing flush wood doors.
 - 2. Solid-core doors with wood-veneer faces.
 - 3. Factory machining for hardware.
- B. Related Sections include the following:
 - 1. Division 8 Section "Glazing" for glass view panels in flush wood doors.

1.3 SUBMITTALS

- A. Product Data: For each type of door. Include details of core and edge construction, louvers, and trim for openings. Include factory-finishing specifications.
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
 - 1. Indicate dimensions and locations of mortises and holes for hardware.
 - 2. Indicate dimensions and locations of cutouts.
 - 3. Indicate doors to be factory finished and finish requirements.
 - 4. Indicate fire ratings for fire doors.
- C. Samples for Initial Selection: Color charts consisting of actual materials in small sections for the following:
 - 1. Faces of Factory-Finished Doors: Show the full range of colors available for stained finishes.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer.
- B. Quality Standard: Comply with NWWDA I.S.1-A, "Architectural Wood Flush Doors" and AWI's "Architectural Woodwork Quality Standards Illustrated".
- C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in plastic bags or cardboard cartons.
- C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form, signed by manufacturer, Installer, and Contractor, in which manufacturer agrees to repair or replace doors that are defective in materials or workmanship, have warped (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section, or show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
 - 1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
 - 2. Warranty shall be in effect during the following period of time from date of Substantial Completion:
 - a. Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Flush Wood Doors:
 - a. Algoma Hardwoods Inc.
 - b. Ampco Products, Inc.
 - c. Buell Door Company.
 - d. Chappell Door Co.
 - e. Eagle Plywood & Door Manufacturing, Inc.
 - f. Eggers Industries; Architectural Door Division.
 - g. GRAHAM Manufacturing Corp.
 - h. Haley Brothers, Inc.
 - i. Ideal Wood Products, Inc.
 - j. IPIK Door Company.
 - k. Lambton Doors.
 - l. Marlite.
 - m. Mohawk Flush Doors, Inc.
 - n. Oshkosh Architectural Door Co.

- o. Poncraft Door Co.
- p. Southwood Door Co.
- q. Vancouver Door Company, Inc.
- r. VT Industries Inc.
- s. Weyerhaeuser Company.

2.2 DOOR CONSTRUCTION, GENERAL

A. Doors for Transparent Finish:

- 1. Grade: Premium, with Grade A faces.
- 2. Species and Cut: Red oak, rift cut.
- 3. Match between Veneer Leaves: Pleasing match.
- 4. Assembly of Veneer Leaves on Door Faces: Balance match.
- 5. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
- 6. Room Match: Provide door faces of compatible color and grain within each separate room or area of building.
- 7. Stiles: Same species as faces or a compatible species.

2.3 SOLID-CORE DOORS

A. Particleboard Cores: Comply with the following requirements:

- 1. Particleboard: ANSI A208.1, Grade LD-1.
- 2. Blocking: Provide wood blocking in particleboard-core doors as needed to eliminate through-bolting hardware.
 - a. 5-inch top-rail blocking, in doors indicated to have closers.
 - b. 5-inch midrail blocking, in doors indicated to have exit devices.

B. Interior Veneer-Faced Doors:

- 1. Core: Particleboard.
- 2. Construction: Five or seven plies with stiles and rails bonded to core, then entire unit abrasive planed before veneering.

C. Fire-Rated Doors:

- 1. Construction: Construction and core specified above for type of face indicated or manufacturer's standard mineral-core construction as needed to provide fire rating indicated.
- 2. Blocking: For mineral-core doors, provide composite blocking with improved screw-holding capability approved for use in doors of fire ratings indicated as needed to eliminate through-bolting hardware.
 - a. 5-inch top-rail blocking.
 - b. 5-inch bottom-rail blocking, in doors indicated to have protection plates.
 - c. 5-inch midrail blocking, in doors indicated to have armor plates.
 - d. 5-inch midrail blocking, in doors indicated to have exit devices.

3. Edge Construction: At hinge stiles, provide manufacturer's standard laminated-edge construction with improved screw-holding capability and split resistance and with outer stile matching face veneer.
4. Pairs: Provide fire-rated pairs with fire-retardant stiles matching face veneer that are labeled and listed for kinds of applications indicated without formed-steel edges and astragals.

2.4 LIGHT FRAMES

A. Wood Beads for Light Openings in Wood Doors:

1. Wood Species: Species compatible with door faces.
2. Profile: Flush rectangular beads
3. At 20-minute, fire-rated, wood-core doors, provide wood beads and metal glazing clips approved for such use.

2.5 FABRICATION

A. Fabricate doors in sizes indicated for Project-site fitting.

B. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels, unless otherwise indicated:

1. Comply with clearance requirements of referenced quality standard for fitting. Comply with requirements in NFPA 80 for fire-rated doors.

C. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.

1. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before machining.
2. Metal Astragals: Premachine astragals and formed-steel edges for hardware for pairs of fire-rated doors.

D. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of door(s) required.

1. Light Openings: Trim openings with moldings of material and profile indicated.

2.6 FACTORY FINISHING

A. General: Comply with AWI's "Architectural Woodwork Quality Standards Illustrated" for factory finishing.

B. Finish doors at factory.

C. Finish doors at factory that are indicated to receive transparent finish.

D. Transparent Finish:

1. Grade: Premium.
2. Finish: Manufacturer's standard finish with performance comparable to AWI System TR-4 conversion varnish or AWI System TR-6 catalyzed polyurethane.
3. Staining: As selected by Architect from manufacturer's full range.
4. Effect: Open-grain finish.
5. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and installed door frames before hanging doors.
 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For installation, see Division 8 Section "Door Hardware."
- B. Manufacturer's Written Instructions: Install doors to comply with manufacturer's written instructions, referenced quality standard, and as indicated.
 1. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80.
- C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.
 1. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold.
 - a. Comply with NFPA 80 for fire-rated doors.
 2. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
 3. Bevel fire-rated doors 1/8 inch in 2 inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.
- D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.

- B. Finished Doors: Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 08211

SECTION 08331 - OVERHEAD COILING DOORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Counter doors.
- B. Related Section:
 - 1. Division 5 Section "Metal Fabrications" for miscellaneous steel supports.

1.2 SUBMITTALS

- A. Product Data: For each type and size of overhead coiling door and accessory.
- B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
- C. Samples: For each exposed product and for each color and texture specified.
- D. Maintenance Data.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for both installation and maintenance of units required for this Project.
 - 1. Smoke Control: **In corridors and smoke barriers**, provide doors that are listed and labeled with the letter "S" on the fire-rating label by a qualified testing agency for smoke- and draft-control based on testing according to **UL 1784**; with maximum air-leakage rate of **3.0 cfm/sq. ft. (0.01524 cu. m/s x sq. m)** of door opening at **0.10 inch wg (24.9 Pa)** for both ambient and elevated temperature tests.

PART 2 - PRODUCTS

2.1 DOOR CURTAIN MATERIALS AND CONSTRUCTION

- A. Door Curtains: Fabricate overhead coiling-door curtain of interlocking metal slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices.

Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:

1. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face.
 2. Plastic Interior Curtain-Slat Facing: Extruded PVC plastic with maximum flame-spread index of **25** and smoke-developed index of 450, according to ASTM E 84.
- B. Bottom Bar for Service Doors: Consisting of two angles, each not less than **1-1/2 by 1-1/2 by 1/8 inch (38 by 38 by 3 mm)** thick; fabricated from metal to match curtain slats and finish.
- C. Bottom Bar for Counter Doors: Manufacturer's standard continuous channel or tubular shape, fabricated from metal to match curtain slats and finish.
- D. Astragal for Interior Doors: Equip each door bottom bar with a replaceable, adjustable, continuous, compressible gasket of flexible vinyl, rubber, or neoprene as a cushion bumper.
- E. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain.

2.2 HOOD

- A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.

2.3 COUNTER DOORS

- A. Integral Frame, Hood, and Fascia for Counter Door: Welded sheet metal assembly of the following sheet metal:
- B. Integral Metal Sill for Counter Door: Fabricate sills as integral part of frame assembly of Type 304 stainless steel in manufacturer's standard thickness with **No. 4** finish.

2.4 LOCKING DEVICES

- A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on both left and right jamb sides, operable from coil side.
- B. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.
1. Lock Cylinders: Provide cylinders **standard with manufacturer and keyed to building keying system**.
 2. Keys: Provide **Three** for each cylinder.

2.5 CURTAIN ACCESSORIES

- A. Smoke Seals: Equip each fire-rated door with smoke-seal perimeter gaskets for smoke and draft control as required for door listing and labeling by a qualified testing agency.
- B. Push/Pull Handles: Equip each push-up-operated or emergency-operated door with lifting handles on each side of door, finished to match door. **Provide pull-down straps or pole hooks for doors more than 84 inches (2130 mm) high.**
 - 1. Manufacturer's standard UL-labeled smoke detector and door-holder-release devices.

2.6 COUNTERBALANCING MECHANISM

- A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.
- B. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.7 MANUAL DOOR OPERATORS

- A. Equip door with manufacturer's recommended manual door operator unless another type of door operator is indicated.
- B. Push-up Door Operation: Design counterbalance mechanism so required lift or pull for door operation does not exceed **25 lbf (111 N)**.
- C. Crank Operator: Consisting of crank and crank gearbox, steel crank drive shaft, and gear-reduction unit, of type indicated. Size gears to require not more than **25 lbf (111 N)** force to turn crank. Fabricate gearbox to be oil tight and to completely enclose operating mechanism. Provide manufacturer's standard crank-locking device.

2.8 DOOR ASSEMBLY

- A. **Counter** Door: Overhead coiling door formed with curtain of interlocking metal slats.
 - 1. Manufacturers: Subject to compliance with requirements, **provide products by one of the following**
 - 2. :
 - a. ACME Rolling Doors.
 - b. Alpine Overhead Doors, Inc.
 - c. AlumaTek, Inc.
 - d. C.H.I. Overhead Doors.
 - e. City-Gates.
 - f. Cookson Company.
 - g. Cornell Iron Works, Inc.
 - h. Dynamic Closures Corp.
 - i. Lawrence Roll-Up Doors, Inc.
 - j. Mahon Door Corporation.

- k. McKeon Rolling Steel Door Company, Inc.
 - l. Metro Door.
 - m. Overhead Door Corporation.
 - n. QMI Security Solutions.
 - o. Raynor.
 - p. Southwestern Steel Rolling Door Co.
 - q. Wayne-Dalton Corp.
 - r. Windsor Door.
- B. Operation Cycles: Not less than **10,000**.
- C. Door Curtain Material: **Aluminum**.
- D. Door Curtain Slats: **Flat** profile slats of **1-1/4-inch (32-mm)** center-to-center height.
- E. Curtain Jamb Guides: **Aluminum** with exposed finish matching curtain slats
- F. Hood: **Match curtain material and finish**
- 1. Shape: Square.
 - 2. Mounting: **Face of wall**
- G. Sill Configuration for Counter Door: **No sill**.
- H. Locking Devices: Equip door with **locking device assembly**.
- 1. Locking Device Assembly: **Single-jamb side >**.
- I. Manual Door Operator: **Push-up operation/ crank operator**].
- 1. Provide operator with manufacturer's standard removable operating arm.
 - 2. **device>**.
- J. Door Finish:
- 1. Aluminum Finish: Mill

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install overhead coiling doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- B. Smoke-Control Doors: Install according to NFPA 80 and NFPA 105.
- C. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion. Lubricate bearings and sliding parts as recommended by manufacturer.

3.2 DEMONSTRATION

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

END OF SECTION 08331

SECTION 08334 - OVERHEAD COILING GRILLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes open-curtain overhead coiling grilles.
- B. Related Section:
 - 1. Division 5 Section "Metal Fabrications" for miscellaneous steel supports.

1.3 SUBMITTALS

- A. Product Data: For each type and size of overhead coiling grille and accessory.
- B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 2. Wiring Diagrams: For power, signal, and control wiring.
- C. Samples: For each exposed product and for each color and texture specified.
- D. Maintenance data.

1.4 QUALITY ASSURANCE

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

PART 2 - PRODUCTS

2.1 GRILLE CURTAIN MATERIALS AND CONSTRUCTION

- A. Open-Curtain Grilles: Fabricate metal grille curtain as an open network of horizontal rods, spaced at regular intervals, that are interconnected with vertical links, which are formed and spaced as indicated and are free to rotate on the rods.
- B. Bottom Bar: Manufacturer's standard continuous channel or tubular shape, finished to match grille.
 - 1. Astragal: Equip each grille bottom bar with a replaceable, adjustable, continuous, compressible gasket of flexible vinyl, rubber, or neoprene as a cushion bumper.
 - 2. Provide motor-operated grilles with combination bottom astragal and sensor edge.
- C. Grille Curtain Jamb Guides: Manufacturer's standard shape having curtain groove with return lips or bars to retain curtain. Provide continuous integral wear strips to prevent metal-to-metal contact and to minimize operational noise; with removable stops on guides to prevent overtravel of curtain.
 - 1. Removable Posts and Jamb Guides: Manufacturer's standard.

2.2 HOODS AND ACCESSORIES

- A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.
 - 1. Removable Metal Soffit: Of same material and finish as curtain if hood is mounted above ceiling, unless otherwise indicated.
- B. Mounting Frame: Manufacturer's standard mounting frame designed to support grille; factory fabricated from ASTM A 36/A 36M structural-steel **[tubes] [or] [shapes]**, hot-dip galvanized per ASTM A 123/A 123M; fastened to floor and structure above grille; to be built into wall construction; and complete with anchors, connections, and fasteners.
- C. Push/Pull Handles: Equip each push-up-operated or emergency-operated grille with lifting handles on each side of grille, finished to match grille. **Provide pull-down straps or pole hooks for grilles more than 84 inches (2130 mm) high.**

2.3 LOCKING DEVICES

- A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on both left and right jamb sides, operable from coil side.
- B. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.

1. Lock Cylinders: Provide cylinders **standard with manufacturer and keyed to building keying system**.
 2. Keys: **Three** for each cylinder.
- C. Chain Lock Keeper: Suitable for padlock.
- D. Safety Interlock Switch: Equip power-operated grilles with safety interlock switch to disengage power supply when grille is locked.

2.4 COUNTERBALANCING MECHANISM

- A. General: Counterbalance grilles by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.
- B. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.5 ELECTRIC GRILLE OPERATORS

- A. General: Electric grille operator assembly of size and capacity recommended and provided by grille manufacturer for grille[**and operation-cycles requirement**] specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, remote-control stations, control devices, integral gearing for locking grille, and accessories required for proper operation.
1. Comply with NFPA 70.
 2. Provide control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6, with NFPA 70 Class 2 control circuit, maximum 24 V, ac or dc.
- B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each grille.
- C. Electric Motors: Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Division 11 Section "Common Motor Requirements for Equipment" unless otherwise indicated.
1. Electrical Characteristics:
 - a. Phase: **Single phase**.
 - b. Volts: **115 V**.
 - c. Hertz: 60.
 2. Motor Type and Controller: Reversible motor and controller (disconnect switch) for motor exposure indicated.
 3. Motor Size: Minimum size as indicated. If not indicated, large enough to start, accelerate, and operate grille in either direction from any position, at a speed not less than **8 in./sec. (203 mm/s)** and not more than **12 in./sec. (305 mm/s)**, without exceeding nameplate ratings or service factor.
 4. Operating Controls, Controllers (Disconnect Switches), Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.

- D. Obstruction Detection Device: Equip motorized grille with indicated external automatic safety sensor capable of protecting full width of grille opening. Activation of sensor immediately stops and reverses downward grille travel.
 - 1. Sensor Edge: Automatic safety sensor edge, located within astragal or weather stripping mounted to bottom bar. Contact with sensor activates device. Connect to control circuit using manufacturer's standard take-up reel or self-coiling cable. **Provide self-monitoring capability designed to interface with grille operator control circuit to detect damage to or disconnection of sensing device.**
- E. Remote-Control Station: Momentary-contact, three-button control station with push-button controls labeled "Open," "Close," and "Stop"; interior units, full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.
- F. Emergency Manual Operation: Equip each electrically powered grille with capability for emergency manual operation. Design manual mechanism so required force for grille operation does not exceed **25 lbf (111 N)**.
- G. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.
- H. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.
- I. Audible and Visual Signals: Audible alarm and visual indicator lights in compliance with regulatory requirements for accessibility.
- J. Emergency-Egress Release: Flush, wall-mounted handle mechanism, for ADA-ABA-compliant egress feature, not dependent on electric power. The release allows an unlocked grille to partially open without affecting limit switches to permit passage, and it automatically resets motor drive upon return of handle to original position.
- K. Self-Opening Mechanism: Automatic release mechanism triggered by **smoke detector, emergency push-button station**, fire alarm or power failure. When activated, the grille self opens by means of a fail-safe operator to the fully open position without the need of power operation or battery backup systems. When the **emergency push-button is reset, and the** alarm is cleared and power is restored, the grille will operate normally.

2.6 OPEN-CURTAIN GRILLE ASSEMBLY

- A. Open-Curtain Grille: Overhead coiling grille with a curtain having a network of horizontal rods that interconnect with vertical links.
 - 1. Manufacturers: Subject to compliance with requirements, **provide products by one of the following:**
 - a. ACME Rolling Doors.
 - b. Alpine Overhead Doors, Inc.
 - c. AlumaTek, Inc.
 - d. City-Gates.
 - e. Cookson Company.

- f. Cornell Iron Works, Inc.
 - g. Dynaflair Corporation.
 - h. Dynamic Closures Corp.
 - i. Lawrence Roll-Up Doors, Inc.
 - j. Mahon Door Corporation.
 - k. McKeon Rolling Steel Door Company, Inc.
 - l. Metro Door.
 - m. Overhead Door Corporation.
 - n. Raynor.
 - o. Windsor Door.
- B. Operation Cycles: Not less than **10,000**.
- C. Grille Curtain Material: **Aluminum**.
 - 1. Space rods at approximately **3 inches (76 mm)** o.c.
 - 2. Space links approximately **9 inches (228 mm)** apart in a **straight in-line** pattern.
 - 3. Spacers: **Metal tubes matching curtain material**.
- D. Curtain Jamb Guides: **Aluminum** with exposed finish matching curtain slats. Provide continuous integral wear strips to prevent metal-to-metal contact and to minimize operational noise.
- E. Hood: **Match curtain material and finish**.
 - 1. Shape: **Square**.
 - 2. Mounting: **Between jambs**.
- F. Electric Grille Operator:
 - 1. Usage Classification: **Light duty, up to 10 cycles per hour**.
 - 2. Emergency Manual Operation: **Chain** type.
 - 3. Obstruction-Detection Device: Automatic **electric sensor edge on bottom bar**.
 - 4. Remote-Control Station: **Where shown on Drawings**.
 - 5. Other Equipment: **Emergency-egress release**.
- G. Grille Finish:
 - 1. Aluminum Finish: **Mill**

PART 3 - EXECUTION

3.1 INSTALLATION

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

3.2 DEMONSTRATION

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

END OF SECTION 08334

SECTION 08411 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. **Exterior** storefront framing.
 - 2. Storefront framing for ribbon walls.
 - 3. Storefront framing for punched openings.
 - 4. **Exterior** manual-swing entrance doors.

1.3 DEFINITIONS

- A. ADA/ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disability Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities."

1.4 PERFORMANCE REQUIREMENTS

- A. General Performance: Aluminum-framed systems shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:
 - 1. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
 - 2. Dimensional tolerances of building frame and other adjacent construction.
 - 3. Failure includes the following:
 - a. Deflection exceeding specified limits.
 - b. Thermal stresses transferring to building structure.
 - c. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.
 - d. Glazing-to-glazing contact.
 - e. Noise or vibration created by wind and by thermal and structural movements.
 - f. Loosening or weakening of fasteners, attachments, and other components.
 - g. Sealant failure.
 - h. Failure of operating units.
- B. Delegated Design: Design aluminum-framed systems, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

C. Structural Loads:

1. Wind Loads: **As indicated on Drawings..**

D. Deflection of Framing Members:

1. Deflection Normal to Wall Plane: Limited to **1/175 of clear span for spans up to 13 feet 6 inches (4.1 m)** and to **1/240 of clear span plus 1/4 inch (6.35 mm)** for spans greater than **13 feet 6 inches (4.1 m)** or an amount that restricts edge deflection of individual glazing lites to **3/4 inch (19 mm)**, whichever is less.
2. Deflection Parallel to Glazing Plane: Limited to **amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components directly below them to less than 1/8 inch (3.2 mm) and clearance between members and operable units directly below them to less than 1/16 inch (1.5 mm).**

E. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:

1. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.
2. When tested at **150** percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding **0.2** percent of span.
3. Test Durations: As required by design wind velocity, but not fewer than 10 seconds.

F. Windborne-Debris-Impact-Resistance Performance: Provide aluminum-framed systems that pass missile-impact and cyclic-pressure tests when tested according to **ASTM E 1886 and testing information in ASTM E 1996 and Florida Building Code test protocols.**

1. Large-Missile Impact: For aluminum-framed systems located within **30 feet (9.1 m)** of grade.
2. Small-Missile Impact: For aluminum-framed systems located more than **30 feet (9.1 m)** above grade.

G. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of **0.06 cfm/sq. ft. (0.03 L/s per sq. m)** of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of **6.24 lbf/sq. ft. (300 Pa).**

H. Water Penetration under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than **6.24 lbf/sq. ft. (300 Pa).**

1. Maximum Water Leakage: **No uncontrolled water penetrating aluminum-framed systems or water appearing on systems' normally exposed interior surfaces from sources other than condensation.** Water leakage does not include water controlled by flashing and gutters that is drained to exterior and water that cannot damage adjacent materials or finishes.

I. Thermal Movements: Provide aluminum-framed systems that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures.

Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
 2. Test Performance: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5.
 - a. High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180 deg F (82 deg C).
 - b. Low Exterior Ambient-Air Temperature: 0 deg F (minus 18 deg C).
 3. Interior Ambient-Air Temperature: 75 deg F (24 deg C).
- J. Structural Sealant: Capable of withstanding tensile and shear stresses imposed by aluminum-framed systems without failing adhesively or cohesively. When tested for preconstruction adhesion and compatibility, cohesive failure of sealant shall occur before adhesive failure.
1. Adhesive failure occurs when sealant pulls away from substrate cleanly, leaving no sealant material behind.
 2. Cohesive failure occurs when sealant breaks or tears within itself but does not separate from each substrate because sealant-to-substrate bond strength exceeds sealant's internal strength.
- K. Structural-Sealant Joints: Designed to produce tensile or shear stress of less than 20 psi (138 kPa).

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for aluminum-framed systems.
- B. LEED Submittal:
1. Product Data for Credit EQ 4.1: For adhesives and sealants used inside of the weatherproofing system, including printed statement of VOC content.
- C. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.
1. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.
 2. For entrance doors, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.
- D. Samples for Initial Selection: For units with factory-applied color finishes.
- E. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

- F. Fabrication Sample: Of each vertical-to-horizontal intersection of aluminum-framed systems, made from 12-inch (300-mm) lengths of full-size components and showing details of the following:
 - 1. Glazing.
- G. Other Action Submittals:
 - 1. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.
- H. Delegated-Design Submittal: For aluminum-framed systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Detail fabrication and assembly of aluminum-framed systems.
- I. Qualification Data: For qualified Installer.
- J. Welding certificates.
- K. Preconstruction Test Reports: For sealant.
- L. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for aluminum-framed systems, indicating compliance with performance requirements.
- M. Source quality-control reports.
- N. Quality-Control Program for Structural-Sealant-Glazed System: Include reports.
- O. Field quality-control reports.
- P. Maintenance Data: For aluminum-framed systems to include in maintenance manuals.
- Q. Warranties: Sample of special warranties.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated.
- C. Engineering Responsibility: Prepare data for aluminum-framed systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in systems similar to those indicated for this Project.
- D. Quality-Control Program for Structural-Sealant-Glazed System: Develop quality control program specifically for Project. Document quality-control procedures and verify results for aluminum-framed systems. Comply with ASTM C 1401 recommendations including, but not

limited to, system material-qualification procedures, preconstruction sealant-testing program, procedures for system fabrication and installation, and intervals of reviews and checks.

- E. **Product Options:** Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
 - 1. Do not revise intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If revisions are proposed, submit comprehensive explanatory data to Architect for review.
- F. **Preconstruction Sealant Testing:** For structural-sealant-glazed systems, perform sealant manufacturer's standard tests for compatibility with and adhesion of each material that will come in contact with sealants and each condition required by aluminum-framed systems.
 - 1. Test a minimum five samples each of metal, glazing, and other material.
 - 2. Prepare samples using techniques and primers required for installed systems.
 - 3. For materials that fail tests, determine corrective measures necessary to prepare each material to ensure compatibility with and adhesion of sealants including, but not limited to, specially formulated primers. After performing these corrective measures on the minimum number of samples required for each material, retest materials.
- G. **Accessible Entrances:** Comply with applicable provisions in **the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and Chapter 11 of the Florida Building Code.**
- H. **Source Limitations for Aluminum-Framed Systems:** Obtain from single source from single manufacturer.
- I. **Structural-Sealant Glazing:** Comply with ASTM C 1401, "Guide for Structural Sealant Glazing" for design and installation of structural-sealant-glazed systems.
- J. **Structural-Sealant Joints:** Design reviewed and approved by structural-sealant manufacturer.
- K. **Welding Qualifications:** Qualify procedures and personnel according to AWS D1.2, "Structural Welding Code - Aluminum."
- L. **Mockups:** Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
 - 1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- M. **Preinstallation Conference:** Conduct conference at **Project site**.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

- 1. Failures include, but are not limited to, the following:
 - a. Structural failures including, but not limited to, excessive deflection.
 - b. Noise or vibration caused by thermal movements.
 - c. Deterioration of metals, **metal finishes**, and other materials beyond normal weathering.
 - d. Adhesive or cohesive sealant failures.
 - e. Water leakage through fixed glazing and framing areas.
 - f. Failure of operating components.
- 2. Warranty Period: **Two** years from date of Substantial Completion.

- B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warranty does not include normal weathering.

- 1. Warranty Period: **Five** years from date of Substantial Completion.

1.9 MAINTENANCE SERVICE

- A. Entrance Door Hardware:

- 1. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of entrance door hardware.
- 2. Initial Maintenance Service: Beginning at Substantial Completion, provide **six** months' full maintenance by skilled employees of entrance door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper entrance door hardware operation at rated speed and capacity. Provide parts and supplies the same as those used in the manufacture and installation of original equipment.

- B. Structural-Sealant-Glazed Systems:

- 1. Initial Maintenance Service: Beginning at Substantial Completion, provide **six** months' full maintenance by skilled employees of structural-sealant-glazed system Installer. Include **quarterly** preventive maintenance, repair or replacement to ensure long-term performance and durability of structural-sealant-glazed system as required for proper entrance door hardware operation at rated speed and capacity. Provide parts and supplies the same as those used in the manufacture and installation of original system.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
- B. Basis-of-Design Product: Subject to compliance with requirements, provide **product indicated on Drawings** or comparable product by one of the following:
 - 1. Arch Aluminum & Glass Co., Inc.
 - 2. Commercial Architectural Products, Inc.
 - 3. EFCO Corporation.
 - 4. Kawneer North America; an Alcoa company.
 - 5. Pittco Architectural Metals, Inc.
 - 6. TRACO.
 - 7. Tubelite.
 - 8. United States Aluminum.
 - 9. Vistawall Architectural Products; The Vistawall Group; a Bluescope Steel company.
 - 10. YKK AP America Inc.

2.2 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - 1. Sheet and Plate: **ASTM B 209 (ASTM B 209M).**
 - 2. Extruded Bars, Rods, Profiles, and Tubes: **ASTM B 221 (ASTM B 221M).**
 - 3. Extruded Structural Pipe and Tubes: ASTM B 429.
 - 4. Structural Profiles: ASTM B 308/B 308M.
 - 5. Welding Rods and Bare Electrodes: AWS A5.10/A5.10M.
- B. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer, complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.
 - 1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
 - 2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
 - 3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

2.3 FRAMING SYSTEMS

- A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.
 - 1. Construction: **Non-Thermally broken Structurally glazed.**
 - 2. Glazing System: **Retained by structural sealant at edges required by windload testing, glazing gasket elsewhere.**
 - 3. Glazing Plane: **As indicated.**

- B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
 - 1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
 - 2. Reinforce members as required to receive fastener threads.
 - 3. Use exposed fasteners with countersunk Phillips screw heads, **finished to match framing system.**
- D. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts, complying with ASTM A 123/A 123M or ASTM A 153/A 153M.
- E. Concealed Flashing: **Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.**
- F. Framing System Gaskets and Sealants: Manufacturer's standard, recommended by manufacturer for joint type.
 - 1. Provide sealants for use inside of the weatherproofing system that have a VOC content of **250** g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.4 GLAZING SYSTEMS

- A. Glazing: As specified in Division 8 Section "Glazing."
- B. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.
- C. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.
- D. Glazing Sealants: For structural-sealant-glazed systems, as recommended by manufacturer for joint type, and as follows:
 - 1. Structural Sealant: ASTM C 1184, single-component neutral-curing silicone formulation that is compatible with system components with which it comes in contact, specifically formulated and tested for use as structural sealant and approved by a structural-sealant manufacturer for use in aluminum-framed systems indicated.
 - a. Provide sealants for use inside of the weatherproofing system that have a VOC content of **100** g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - b. Color: **Black.**
 - 2. Weatherseal Sealant: ASTM C 920 for Type S, Grade NS, Class 25, Uses NT, G, A, and O; single-component neutral-curing formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and aluminum-framed-system manufacturers for this use.

- a. Provide sealants for use inside of the weatherproofing system that have a VOC content of **250 g/L** or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- b. Color: Matching structural sealant.

2.5 ENTRANCE DOOR SYSTEMS

- A. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing operation.
 1. Door Construction: **1-3/4-inch (44.5-mm) overall thickness, with minimum 0.125-inch- (3.2-mm-) thick**, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
 - a. Thermal Construction: **High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.**
 2. Door Design: **Medium stile; 3-1/2-inch (88.9-mm) nominal width.**
 - a. Accessible Doors: Smooth surfaced for width of door in area within **10 inches (255 mm)** above floor or ground plane.
- B. Entrance Door Hardware: As specified in Division 8 Section "Door Hardware."

2.6 ENTRANCE DOOR HARDWARE

- A. General: Provide entrance door hardware **and entrance door hardware sets indicated in door and frame schedule and entrance door hardware sets indicated in "Entrance Door Hardware Sets" Article** for each entrance door to comply with requirements in this Section.
 1. Entrance Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and **named manufacturers' products.**
 2. Opening-Force Requirements:
 - a. Egress Doors: Not more than **15 lbf (67 N)** to release the latch and not more than **30 lbf ((133 N))** to set the door in motion[**and not more than 15 lbf (67 N) to open the door to its minimum required width.**
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of entrance door hardware are indicated in "Entrance Door Hardware Sets" Article. Products are identified by using entrance door hardware designations as follows:
 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in "Entrance Door Hardware Sets" Article.
- C. Opening-Force Requirements:
 1. Latches and Exit Devices: Not more than **15 lbf (67 N)** required to release latch.
- D. Pivot Hinges: BHMA A156.4, Grade 1.

1. Offset-Pivot Hinges: Provide top, bottom, and intermediate offset pivots at each door leaf.
 - E. Mortise Auxiliary Locks: BHMA A156.5, Grade 1.
 - F. Manual Flush Bolts: BHMA A156.16, Grade 1.
 - G. Automatic and Self-Latching Flush Bolts: BHMA A156.3, Grade 1.
 - H. Panic Exit Devices: BHMA A156.3, Grade 1, listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.
 - I. Cylinders: **As specified in Division 8 Section "Door Hardware."**
 1. Keying: **Master** key system. Permanently inscribe each key with a visual key control number and include notation **to be furnished by Owner**.
 - J. Strikes: Provide strike with black-plastic dust box for each latch or lock bolt; fabricated for aluminum framing.
 - K. Operating Trim: BHMA A156.6.
 - L. Closers: BHMA A156.4, Grade 1, with accessories required for a complete installation, sized as required by door size, exposure to weather, and anticipated frequency of use; adjustable to meet field conditions and requirements for opening force.
 - M. Door Stops: BHMA A156.16, Grade 1, floor or wall mounted, as appropriate for door location indicated, with integral rubber bumper.
 - N. Weather Stripping: Manufacturer's standard replaceable components.
 1. Sliding Type: AAMA 701, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.
 - O. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.
 - P. Silencers: BHMA A156.16, Grade 1.
 - Q. Thresholds: BHMA A156.21, raised thresholds beveled with a slope of not more than 1:2, with maximum height of **1/2 inch (13 mm)**.
 - R. Finger Guards: Manufacturer's standard collapsible neoprene or PVC gasket anchored to frame hinge-jamb at center-pivoted doors.
- 2.7 ACCESSORY MATERIALS
- A. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 7 Section "Joint Sealants."
 1. Provide sealants for use inside of the weatherproofing system that have a VOC content of **250 g/L** or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

- B. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for **30-mil (0.762-mm)** thickness per coat.

2.8 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
 - 1. Profiles that are sharp, straight, and free of defects or deformations.
 - 2. Accurately fitted joints with ends coped or mitered.
 - 3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
 - 4. Physical and thermal isolation of glazing from framing members.
 - 5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 - 6. Provisions for field replacement of glazing from **exterior**.
 - 7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- E. Structural-Sealant-Glazed Framing Members: Include accommodations for using temporary support device to retain glazing in place while structural sealant cures.
- F. Storefront Framing: Fabricate components for assembly using **shear-block system**.
- G. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
 - 1. At exterior doors, provide compression weather stripping at fixed stops.
 - 2. At interior doors, provide silencers at stops to prevent metal-to-metal contact. Install three silencers on strike jamb of single-door frames and two silencers on head of frames for pairs of doors.
- H. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
 - 1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
 - 2. At exterior doors, provide weather sweeps applied to door bottoms.
- I. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.
- J. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.9 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, **AA-M12C22A41, Class I, 0.018 mm** or thicker.

2.10 SOURCE QUALITY CONTROL

- A. Structural-Sealant-Glazed Systems: Perform quality-control procedures complying with ASTM C 1401 recommendations, including, but not limited to, system material-qualification procedures, sealant testing, and system fabrication reviews and checks.
- B. Structural-sealant-glazed system will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General:
 - 1. Comply with manufacturer's written instructions.
 - 2. Do not install damaged components.
 - 3. Fit joints to produce hairline joints free of burrs and distortion.
 - 4. Rigidly secure nonmovement joints.
 - 5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
 - 6. Seal joints watertight unless otherwise indicated.
- B. Metal Protection:
 - 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or applying sealant or tape, or by installing nonconductive spacers as recommended by manufacturer for this purpose.
 - 2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
- D. Set continuous sill members and flashing in full sealant bed as specified in Division 7 Section "Joint Sealants" to produce weathertight installation.

- E. Install components plumb and true in alignment with established lines and grades, and without warp or rack.
- F. Install glazing as specified in Division 8 Section "Glazing."
 - 1. Structural-Sealant Glazing:
 - a. Prepare surfaces that will contact structural sealant according to sealant manufacturer's written instructions to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.
 - b. Install weatherseal sealant according to Division 7 Section "Joint Sealants" and according to sealant manufacturer's written instructions to produce weatherproof joints. Install joint filler behind sealant as recommended by sealant manufacturer.
- G. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.
 - 1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
 - 2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.
- H. Install perimeter joint sealants as specified in Division 7 Section "Joint Sealants" to produce weathertight installation.

3.3 ERECTION TOLERANCES

- A. Install aluminum-framed systems to comply with the following maximum erection tolerances:
 - 1. Location and Plane: Limit variation from true location and plane to **1/8 inch in 12 feet (3 mm in 3.7 m); 1/4 inch (6 mm)** over total length.
 - 2. Alignment:
 - a. Where surfaces abut in line, limit offset from true alignment to **1/16 inch (1.5 mm)**.
 - b. Where surfaces meet at corners, limit offset from true alignment to **1/32 inch (0.8 mm)**.
- B. Diagonal Measurements: Limit difference between diagonal measurements to **1/8 inch (3 mm)**.

3.4 FIELD QUALITY CONTROL

- A. Testing Services: Testing and inspecting of representative areas to determine compliance of installed systems with specified requirements shall take place as follows and in successive phases as indicated on Drawings. Do not proceed with installation of the next area until test results for previously completed areas show compliance with requirements.
 - 1. Structural-Sealant Compatibility and Adhesion: Structural sealant shall be tested according to recommendations in ASTM C 1401.
 - a. Destructive Test Method A, "Hand Pull Tab (Destructive)," in ASTM C 1401, Appendix X2, shall be used.
 - 1) A minimum of **two** areas on each building face shall be tested.

2) Repair installation areas damaged by testing.

2. Structural-Sealant Glazing Inspection: After installation of aluminum-framed systems is complete, structural-sealant glazing shall be inspected and evaluated according to recommendations in ASTM C 1401.

- B. Repair or remove work if test results and inspections indicate that it does not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- D. Aluminum-framed assemblies will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports.

3.5 ADJUSTING

- A. Adjust operating entrance door hardware to function smoothly as recommended by manufacturer.
 - 1. For entrance doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3 inches (75 mm) from the latch, measured to the leading door edge.

END OF SECTION 084113

SECTION 08711 – DOOR HARDWARE

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The General Conditions, Supplementary Conditions, and Division 1- General Requirements apply.

1.2 SUMMARY

- A. This Section includes the following:
1. Commercial door hardware for the following:
 - a. Swinging doors
- B. Provide security for buildings by installing temporary locksets until Substantial Completion at which time Contractor shall contact a local representative/installer of Mul-T-Lock system and replace all cylinders with Mul-T-Lock cylinders, keyed as directed by the Owner. Mul-T-Lock Territory Manager: Mr. Angel Padron, Cell No. 786-537-6111

1.3 SUMITTALS

- A. Product Data: Include installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Door Hardware Schedule: Coordinate final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening, include hardware group designation used in this Section.
 2. Content: Include the following information:
 - a. Type, style, function, size, label, hand and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Verification hardware meets door/frame wind loading requirements
 3. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

Community Center Addition and Renovations
Gulf Breeze, Florida

- C. Keying Schedule: Prepared by or under the supervision of supplier, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.
- D. Maintenance Data: For each type of door hardware to include in maintenance manual specified in Division 1.
- E. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

- A. Installer Qualification: An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this project and whose work has resulted in construction with a record of successful in-service performance.
- B. Supplier Qualifications: Door hardware supplier with warehousing facilities in Project's vicinity and who is or employs a qualified Architectural Hardware Consultant, available during the course of the Work to consult with contractor Architect, and Owner about door hardware and keying.
 - 1. Scheduling Responsibility: Preparation of door hardware and keying schedules.
- C. Source Limitation: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.
- D. Regulatory Requirements: Comply with provisions of the following:
 - 1. Where indicated to comply with accessibility requirements, comply with American with Disabilities Act (ADA), "Accessibility Guidelines for Builders and Facilities (ADAAG)," ANSI A117.1, and FED-STD-795, Uniform Federal Accessibility Standards," as follows:
 - a. Handles, Pulls, Latches, locks, and other operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
 - b. Door Closers: Comply with the following maximum opening-force requirements indicated.
 - 1. Interior Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
 - 2. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - c. Thresholds: Not more than ½ inch (13mm) high. Bevel raised thresholds with a slope of not more than 1:2.
 - 2. NFPA 101: Comply with the following for means of egress doors:
 - a. Latches, Locks and Exit Devices: Not more than 15 lbf (67 N) to release the latch. Locks shall not require the use of the key, tool, or special knowledge for operation.
 - b. Door Closers: Not more than 30 lbf (133 N) to set door in motion and not more than 15 lbf (67 N) to open door to minimum required width.
 - c. Thresholds: Not more than ½ inch (13 mm) high.
- E. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252.

Community Center Addition and Renovations
Gulf Breeze, Florida

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide some secure lock-up for door hardware delivered to project site.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver keys to manufacturer of key control system.

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.7 WARRANTY

- A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials and workmanship within specified warranty period. Failure include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of operators and door hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
- C. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.
- D. Warranty period for Manual Closers: 10 years from date of Substantial Completion.

1.8 MAINTENANCE SERVICES

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 – PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. Provide door hardware for each door to comply with requirements in this Section, door hardware sets indicated in door and frame schedule, and the Door Hardware Schedule at the end of Part 3.

2.2 HINGES AND PIVOTS

- A. Manufacturers: Subject to compliance with requirements, provided products by one of the following:

Community Center Addition and Renovations
Gulf Breeze, Florida

1. Hinges:
 - a. Hager Companies (HAG)
 - b. Lawrence Brothers Inc. (LB)
 - c. McKinney Products Company, Div. of ESSEX Industries, Inc. (MCK)
 - d. Stanley Commercial Hardware, Div. of The Stanley Works (STH)
 - B. Quantity: Provide the following, unless otherwise indicated:
 1. Three Hinges: For doors with heights up to 90 inches (1549 to 2286 mm)
 2. Four Hinges: For doors with heights 91 to 120 inches (2311 to 3048 mm)
 - C. Fasteners: Comply with the following:
 1. Screws: Phillips flat-head screws; machine screws (drilled and tapped holes) for metal doors and frames, wood screws for wood doors. Finish screw heads to match surface of hinges.
- 2.3 LOCKS AND LATCHES
- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Cylindrical Locks: Compatible with Mul-T-Lock cores/keying system (No substitutions).
 2. Handle: Lever Style complying with ADA.
- 2.4 DOOR BOLTS
- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Flush Bolts:
 - a. Glynn-Johnson; an Ingersoll-Rand Company (GJ)
 - b. Hager Companies (HAG)
 - c. Ives: H.B. Ives (IVS)
 - d. Triangle Brass Manufacturing Company, Inc. (TBM)
 - e. Rockwood Manufacturing
- 2.5 EXIT DEVICES AND CONCEALED VERTICAL ROD DEVICES
- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
 1. Corbin Russwin Architectural Hardware; Div. of Yate Security, Inc. (CR)
 2. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT)
 3. Von Duprin; an Ingersoll-Rand Company (VD)
 4. Dorma Door Controls
 - B. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305. Provide cylinder dodging.

Community Center Addition and Renovations
Gulf Breeze, Florida

- C. Fire Exit Devices: Comply with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252.

2.6 CYLINDERS AND KEYING

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Cylinders: Mul-T-Lock (No Substitution)
- B. Construction Keying: Comply with the following:
 - 1. Construction Cores: Provide construction cores that are replaceable by permanent cores.
 - a. Replace construction cores with permanent cores, as indicated in keying schedule when directed by Owner.
- C. Keying System: Unless otherwise indicated provide a factory-registered keying system complying with the following requirements:
 - 1. Master key or grand master key locks to Owner's requirements.
- D. Keys: Provide nickel-silver keys complying with the following:
 - 1. 3 change key per lock
 - 2. 5 master keys
 - 3. 5 grandmaster keys
 - 4. 5 construction master keys

2.7 CLOSERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Surface Mounted Closers:
 - a. Corbin Russwin Architectural Hardware; Div. of Yate Security, Inc. (CR)
 - b. LCN Closers; an Ingersoll-Rand Company (LCN)
 - c. Norton Door Controls; Div. of Yates Security Inc. (NDC)
 - d. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT)
 - e. Dorma Door Controls

2.8 PROTECTIVE TRIM UNITS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Metal Protective Trim Units;
 - a. Hager Companies (HAG)
 - b. Ives: H.B. Ives (IVS)
 - c. Rockwood Manufacturing Company (RM)
 - d. Triangle Brass Manufacturing Company, Inc. (TBM)

Community Center Addition and Renovations
Gulf Breeze, Florida

- B. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units consisting of either machine or self-tapping screws.

2.9 STOPS AND HOLDERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Glynn-Johnson; an Ingersoll-Rand Company (GJ)
 2. Hager Companies (HAG)
 3. Ives: H.B. Ives (IVS)
 4. Rockwood Manufacturing Company (RM)
 5. Triangle Brass Manufacturing Company, Inc. (TBM)
 6. Architectural Builders Hardware
- B. Floor Stops: For doors, unless wall or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic.
1. Where floor or wall stops are not appropriate, provide overhead holders.

2.10 WEATHERSTRIPPING

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Door Gasketing:
 - a. Hager Companies (HAG)
 - b. National Guard Products, Inc. (NGP)
 - c. Pemko Manufacturing Company (PEM)
 - d. Reese Enterprises, Inc. (RE)
 - e. Sealeze Corporation (SEL)
 - f. Zero International, Inc. (ZRO)
 2. Corbin Russwin Architectural Hardware; Div. of Yate Security, Inc. (CR)
 3. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT)
 4. Von Duprin; an Ingersoll-Rand Company (VD)
 5. Dorma Door Controls

2.11 THRESHOLDS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Hager Companies (HAG)
 2. National Guard Products, Inc. (NGP)
 3. Pemko Manufacturing Company (PEM)
 4. Reese Enterprises, Inc. (RE)
 5. Sealeze Corporation (SEL)

6. Zero International, Inc. (ZRO)

2.12 MISCELLANEOUS DOOR HARDWARE

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Baldwin Hardware Corporation (BH)
 2. Hager Companies (HAG)
 3. Ives: H.B. Ives (IVS)
 4. Rockwood Manufacturing Company (RM)
 5. Triangle Brass Manufacturing Company, Inc. (TBM)

2.13 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.
 1. Where it is not possible to reinforce substrate adequately for screws, use through-bolts with sleeves or use sex bolts.
 - a. Do not use where head or nut would be exposed on face of door, unless specifically indicated or made necessary by other requirements.
 - b. Finish exposed heads and nuts the same as hardware on that side of the door.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Steel Doors and Frames: Comply with DHI A115 Series.
 1. Surface-Applied Door Hardware: Drill and tap doors and frames according to SDI 107.
- B. Thresholds: Set thresholds for exterior full bed of polysulfide sealant.

3.3 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation of function of every unit. Provide new units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
- B. Six-Month Adjustment: Approximately six months after date of Substantial Completion, Installer shall perform the following:

Community Center Addition and Renovations
Gulf Breeze, Florida

1. Examine and readjust each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.
2. Consult with and instruct Owner's personnel on recommended maintenance procedures.
3. Remove new door hardware items that have deteriorated or failed due to faulty design, materials, or installation of door hardware units and provide new of equal quality, finish, function and manufacturer.

3.4 CLEANING AND PROTECTION

- A. Clean adjacent surface soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes.

3.6 DOOR HARDWARE SCHEDULE – ATTACHED FOLLOWING THIS SECTION

END OF SECTION 08711

Community Center Addition and Renovations
Gulf Breeze, Florida

HARDWARE SCHEDULE

HARDWARE SET 1 DRS. 101, 101A, 102, 102A, 117, 117A, 118

1 EA. CYLINDER AS REQUIRED FOR KEYING.
BALANCE OF HARDWARE SUPPLIED BY ALUMINUM DOOR MANUFACTURER.

HARDWARE SET 2 DRS 001A, 002A, 004, 116C, 116D

6 EA. BUTTS	BB1199 4.5 x 4.5 NRP	630	HA
1 EA. EXIT DEVICE	HH9927L x 07 SNB	626	VD
1 EA. EXIT DEVICE	HH9927EO SNB	626	VD
1 EA. RIM CYLINDER	20-057TD	626	SC
1 EA. I/C CORE	KW-ICCSH	626	MU
2 EA. CLOSERS	4041 Rw/PA x TB (HO ARM @ DR. 002A)	689	LC
2 EA. FLOOR STOPS	FS444	626	IV
1 EA. THRESHOLD	2005AV	AL	PK
2 EA. SWEEPS	315CN	AL.	PK
1 SET WEATHERSEAL	S88D	BLK	PK
1 SET ASTRAGAL	18041CNB	AL.	PK
1 EA. RAIN DRIP	346	AL.	PK

HARDWARE SET 3 DRS. 006, 008, 104A, 113A

6 EA. BUTTS	BB1279 4.5 x 4.5	652	HA
1 EA. STOREROOM LOCK	ND80TD ATHENS 2 3/4" BS ASA STRIKE	626	SC
1 EA. I/C CORE	KW-ICCSH	626	MU
2 EA. FLUSH BOLTS	FB458 12"	626	IV
2 EA. OVERHEAD HOLDERS	90H	652	GJ
2 EA. SILENCERS			

HARDWARE SET 4 DR. 016

3 EA. BUTTS	BB1279 4.5 x 4.5	652	HA
1 EA. EXIT DEVICE	99L x 07	626	VD
1 EA. RIM CYLINDER	20-057HD	626	SC
1 EA. I/C CORE	KW-1CCSH	626	MU
1 EA. CLOSER	4041 Rw/PA x TB	689	LC
1 EA. WALL BUMPER	WS407CCV	630	IV
3 EA. SILENCERS			

HARDWARE SET 5 DRS. 009, 016A, 104, 104B, 113, 113B,

6 EA. BUTTS	BB1279 4.5 x 4.5	652	HA
1 EA. EXIT DEVICE	9927L x 07 LESS BOTTOM ROD	626	VD
1 EA. EXIT DEVICE	9927EO x LESS BOTTOM ROD	626	VD
1 EA. RIM CYLINDER	20-057HD	626	SC
1 EA. I/C CORE	KW-ICCSH	626	MU
2 EA. CLOSERS	4041 Rw/PA x TB	689	LC
2 EA. WALL BUMPERS	WS407CCV	630	IV
2 EA. SILENCERS			

Community Center Addition and Renovations
Gulf Breeze, Florida

<u>HARDWARE SET 6</u>		DRS. 018, 115, 120, 201		
3 EA. BUTTS	1279 4.5 x 4.5	652		HA
1 EA. STOREROOM LOCK	ND80TD ATHENS 2 3/4" BS ASA STRIKE	626		SC
1 EA. I/C CORE	KW-ICCSH	626		MU
1 EA. WALL BUMPER	WS407CCV (OMIT @ 115)	630		IV
3 EA. SILENCERS				
<u>HARDWARE SET 7</u>		DRS. 025, 108A		
3 EA. BUTTS	1279 4.5 x 4.5	652		HA
1 EA. OFFICE LOCK	ND50TD ATHENS 2 3/4" BS ASA STRIKE	626		SC
1 EA. I/C CORE	KW-ICCSH	626		MU
1 EA. WALL BUMPER	WS407CCV	630		IV
3 EA. SILENCERS				
<u>HARDWARE SET 8</u>		DRS. 105, 105C, 106, 106D		
3 EA. BUTTS	BB1279 4.5 x 4.5	652		HA
1 EA. PUSH PLATE	8200 4" x 16"	630		IV
1 EA. PULL PLATE	8302-8 4" x 16"	630		IV
1 EA. KICK PLATE	8400 12" x 2" LDW x 4BE	630		IV
1 EA. CLOSER	4041 Rw/PA x TB	689		LC
1 EA. WALL BUMPER	WS407CCV	630		IV
3 EA. SILENCERS				
<u>HARDWARE SET 9</u>		DR. 107		
3 EA. BUTTS	BB1279 4.5 x 4.5	652		HA
1 EA. PRIVACYSET	ND40S ATHENS 2 3/4" BS ASA STRIKE	626		SC
1 EA. CLOSER	4041 Rw/PA x TB	689		LC
1 EA. KICK PLATE	8400 12" x 2" LDW x 4BE	630		IV
3 EA. SILENCERS				
<u>HARDWARE SET 10</u>		DRS. 108, 109		
3 EA. BUTTS	BB1279 4.5 x 4.5	652		HA
1 EA. OFFICE LOCK	ND50TD ATHENS 2 3/4" BS ASA STRIKE	626		SC
1 EA. I/C CORE	KW-ICCSH	626		MU
1 EA. CLOSER	4041 Rw/PA x TB	689		LC
1 EA. WALL BUMPER	WS407CCV (FS436 @ DR. 109)	630		IV
3 EA. SILENCERS				
<u>HARDWARE SET 11</u>		DRS. 111, 111A		
3 EA. BUTTS	BB1279 4.5 x 4.5	652		HA
1 EA. ENTRY LOCK	ND53TD ATHENS 2 3/4" BS ASA STRIKE	626		SC
1 EA. I/C CORE	KW-ICCSH	626		MU
1 EA. CLOSER	4041 Rw/PA x TB	689		LC
1 EA. WALL BUMPER	WS407CCV (FS436 @ DR. 109)	630		IV
3 EA. SILENCERS				

Community Center Addition and Renovations
Gulf Breeze, Florida

<u>HARDWARE SET 12</u>	DRS. 001, 116, 116B		
6 EA. BUTTS	BB1279 4.5 x 4.5	652	HA
1 EA. EXIT DEVICE	9927L x 07 LESS BOTTOM ROD	626	VD
1 EA. EXIT DEVICE	9927EO x LESS BOTTOM ROD	626	VD
1 EA. RIM CYLINDER	20-057HD	626	SC
1 EA. I/C CORE	KW-ICCSH	626	MU
2 EA. CLOSERS	4041 Rw/PA x TB	689	LC
2 EA. KICK PLATES	8400 12" x 2" LDW x B4E	630	IV
2 EA. FLOOR STOPS	FS436	626	IV
2 EA. SILENCERS			

<u>HARDWARE SET 13</u>	DRS. 009A, 116A		
6 EA. BUTTS	1279 4.5 x 4.5	652	HA
1 EA. STOREROOM LOCK	ND80TD ATHENS 2 3/4" BS ASA STRIKE	626	SC
1 EA. I/C CORE	KW-ICCSH	626	MU
2 EA. FLUSH BOLTS	FB458 12"	626	IV
2 EA. FLOOR STOPS	FS436	626	IV
2 EA. SILENCERS			

<u>HARDWARE SET 14</u>	DR. 119 & 121		
6 EA. BUTTS	BB1199 4.5 x 4.5 NRP	630	HA
1 EA. STOREROOM LOCK	ND80TD ATHENS 2 3/4" BS ASA STRIKE	626	SC
1 EA. I/C CORE	KW-ICCSH	626	MU
2 EA. SURFACE BOLTS	SB360 12" x SNB	626	IV
2 EA. OVERHEAD HOLDERS	90H x SNB	630	GJ
2 EA. FLOOR STOPS	FS444	626	IV
1 EA. THRESHOLD	2005AV	AL.	PK
2 EA. SWEEPS	315CN	AL.	PK
1 SET WEATHERSEAL	S88D	BLK	PK
1 EA. RAIN DRIP	346	AL.	PK
1 EA. LOCK GUARD	BLP-107	630	DJ

<u>HARDWARE SET 15</u>	DR. 202		
3 EA. BUTTS	BB1279 4.5 x 4.5	652	HA
1 EA. PASSAGESET	ND10S ATHENS 2 3/4" BS ASA STRIKE	626	SC
1 EA. CLOSER	4041 Rw/PA x TB	689	LC
2 EA. WALL BUMPER	WS407CCV	630	IV
3 EA. SILENCERS			

<u>HARDWARE SET 16</u>	DR. 202A		
3 EA. BUTTS	BB1199 4.5 x 4.5 NRP	630	HA
1 EA. STOREROOM LOCK	ND80TD ATHENS 2 3/4" BS ASA STRIKE	626	SC
(MOUNT THE LOCKING SIDE ON THE CORRIDOR SIDE)			
1 EA. I/C CORE	KW-ICCSH	626	MU
1 EA. CLOSER	4041 Rw/PA x TB	689	LC
1 EA. FLOOR STOP	FS444	626	IV
1 EA. THRESHOLD	2005AV	AL.	PK
1 EA. SWEEP	315CN	AL.	PK
1 SET WEATHERSEAL	S88D	BLK	PK
1 EA. RAIN DRIP	346	AL.	PK

Community Center Addition and Renovations
Gulf Breeze, Florida

<u>HARDWARE SET 17</u>		DRS. 004A & 006A		
EA. BUTTS	BB1279 4.5 x 4.5	652	HA	
1 EA. EXIT DEVICE	99L-F x 07	626	VD	
1 EA. RIM CYLINDER	20-057HD	626	SC	
1 EA. I/C CORE	KW-1CCSH	626	MU	
1 EA. CLOSER	4041 Rw/PA x TB	689	LC	
1 EA. WALL BUMPER	WS407CCV	630	IV	
3 EA. SILENCERS				

<u>HARDWARE SET 18</u>		DR. 002		
6 EA. BUTTS	BB1279 4.5 x 4.5	652	HA	
2 EA. VERTICAL ROD EXITS	9927L-F x 07 LBR	626	VD	
2 EA. RIM CYLINDERS	20-057TD	626	SC	
2 EA. I/C CORES	KW-ICCSH	626	MU	
2 EA. CLOSERS	4041 Rw/PA x TB	689	LC	
2 EA. FLOOR STOPS	FS436	626	IV	
2 EA. SILENCERS				

MANUFACTURERS:

HA = HAGER HINGE COMPANY
 SC = SCHLAGE LOCK COMPANY
 MU = MUL-T-LOCK
 VD = VON DUPRIN
 IV = IVES PRODUCTS
 GJ – GLYNN JOHNSON
 PK = PEMKO
 DJ = DONJO MFG.

FINISHES:

630 = BRUSHED STAINLESS STEEL
 626 = BRUSHED CHROME / BRASS OR BRONZE
 652 = BRUSHED CHROME / STEEL
 689 = PAINTED ALUMINUM
 BLK = BLACK
 AL. = ALUMINUM

SECTION 08800 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
 - 1. Windows.
 - 2. Doors.
 - 3. Storefront framing.
 - 4. Glazed entrances.
 - 5. Interior borrowed lites.
- B. Related Sections:
 - 1. Division 8 Section "Aluminum Storefront and Entrances".

1.3 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.
- C. Interspace: Space between lites of an insulating-glass unit.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Delegated Design: Design glass, including comprehensive engineering analysis according to **ASTM E 1300 and Florida Building Code** by a qualified professional engineer, using the following design criteria:
 - 1. Design Wind Pressures: As indicated on Drawings.
 - 2. Vertical Glazing: For glass surfaces sloped 15 degrees or less from vertical, design glass to resist design wind pressure based on glass type factors for short-duration load.

3. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or **1 inch (25 mm)**, whichever is less.
 4. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
1. Temperature Change: **120 deg F (67 deg C)**, ambient; **180 deg F (100 deg C)**, material surfaces.

1.5 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glazing material type, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
1. Testing will not be required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
 2. Use ASTM C 1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
 3. Test no fewer than **eight** Samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
 4. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including the use of specially formulated primers.

1.6 SUBMITTALS

- A. Product Data: For each glass product and glazing material indicated.
- B. LEED Submittals:
1. Product Data for Credit EQ 4.1: For glazing sealants used inside of the weatherproofing system, including printed statement of VOC content.
- C. Glass Samples: For each type of **glass product other than clear monolithic vision glass products**]; **12 inches (300 mm)** square.
1. Tinted glass.
 2. Insulating glass.
 3. Impact resistant glass
- D. Glazing Accessory Samples: For **sealants** in **12-inch (300-mm)** lengths. **Install sealant Samples between two strips of material representative in color of the adjoining framing system.**
- E. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

- F. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- G. Product Certificates: For glass and glazing products, from manufacturer.
- H. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for **tinted insulating glass glazing sealants impact resistant glass**.
 - 1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.
- I. Preconstruction adhesion and compatibility test report.
- J. Warranties: Sample of special warranties.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved by coated-glass manufacturer.
- B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
- C. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
- D. Source Limitations for Glass: Obtain **tinted float glass, coated float glass laminated glass and insulating glass** from single source from single manufacturer for each glass type.
- E. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.
- F. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. GANA Publications: **GANA's "Laminated Glazing Reference Manual" and GANA's "Glazing Manual."**
 - 2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- G. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of **the SGCC or another certification agency acceptable to authorities having jurisdiction**. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- H. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.
- I. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Install glazing in mockups specified in Division 8 Section "**Aluminum-Framed Entrances and Storefronts**" to match glazing systems required for Project, including glazing methods.
2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

J. Preinstallation Conference: Conduct conference at **Project site**.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review temporary protection requirements for glazing during and after installation.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
- B. Comply with insulating-glass manufacturer's written recommendations for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or below **40 deg F (4.4 deg C)**.

1.10 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
 1. Warranty Period: Two years from date of Substantial Completion.
- B. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form in which laminated-glass manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
 1. Warranty Period: **Five** years from date of Substantial Completion.

- C. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GLASS PRODUCTS, GENERAL

- A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.
1. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout Project.
- B. Strength: Where float glass is indicated, provide annealed float glass, Kind HS heat-treated float glass, or Kind FT heat-treated float glass **as needed to comply with "Performance Requirements" Article**. Where heat-strengthened glass is indicated, provide Kind HS heat-treated float glass or Kind FT heat-treated float glass **as needed to comply with "Performance Requirements" Article**. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.
- C. Windborne-Debris-Impact Resistance: Provide exterior glazing that passes Florida Building Code test protocols. Test specimens shall be no smaller in width and length than glazing indicated for use on the Project and shall be installed in same manner as glazing indicated for use on the Project.
1. Large-Missile Test: For glazing located within **30 feet (9.1 m)** of grade.
 2. Small-Missile Test: For glazing located more than **30 feet (9.1 m)** above grade.
- D. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
1. For laminated-glass lites, properties are based on products of construction indicated.
 2. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
 3. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as **Btu/sq. ft. x h x deg F (W/sq. m x K)**.
 4. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
 5. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.2 GLASS PRODUCTS

- A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.
- B. Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
 2. For uncoated glass, comply with requirements for Condition A.
 3. For coated vision glass, comply with requirements for Condition C (other coated glass).
- C. Uncoated Tinted Float Glass: Class 2, complying with other requirements specified.
1. Products: Subject to compliance with requirements, **available products that may be incorporated into the Work include, but are not limited to, the following:**
 2. Tint Color: **Gray.**

2.3 LAMINATED GLASS

- A. Laminated Glass: ASTM C 1172, and complying with testing requirements in 16 CFR 1201 for Category II materials, and with other requirements specified. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
1. Construction: Laminate glass with **polyvinyl butyral interlayer** to comply with interlayer manufacturer's written recommendations.
 2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
 3. Interlayer Color: Clear unless otherwise indicated.
- B. Windborne-Debris-Impact-Resistant Laminated Glass: ASTM C 1172, and complying with testing requirements in 16 CFR 1201 for Category II materials, with "Windborne-Debris-Impact Resistance" Paragraph in "Glass Products, General" Article, and with other requirements specified. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
1. Construction: Laminate glass with the following to comply with interlayer manufacturer's written recommendations:
 - a. Polyvinyl butyral interlayer.
 2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
 3. Interlayer Color: Clear unless otherwise indicated.
- C. Glass: Comply with applicable requirements in "Glass Products" Article as indicated by designations in "Laminated-Glass Types" Article.

2.4 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190, and complying with other requirements specified.
1. Sealing System: Dual seal, with **manufacturer's standard** primary and secondary.
 2. Spacer: **Manufacturer's standard spacer material and construction.**
 3. Desiccant: Molecular sieve or silica gel, or blend of both.

- B. Glass: Comply with applicable requirements in "Glass Products" Article **and in "Laminated Glass" Article** as indicated by designations in "Insulating-Glass Types" Article **and in "Insulating-Laminated-Glass Types" Article**.

2.5 GLAZING SEALANTS

A. General:

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

- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.

1. Products: Subject to compliance with requirements, **available products that may be incorporated into the Work include, but are not limited to, the following :**
 - a. Dow Corning Corporation; 790.
 - b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
 - c. May National Associates, Inc.; Bondaflex Sil 290.
 - d. Pecora Corporation; 890.
 - e. Sika Corporation, Construction Products Division; SikaSil-C990.
 - f. Tremco Incorporated; Spectrem 1.

2.6 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
1. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.7 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.
- G. Perimeter Insulation for Fire-Resistive Glazing: Product that is approved by testing agency that listed and labeled fire-resistant glazing product with which it is used for application and fire-protection rating indicated.

2.8 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.

2.9 INSULATING-LAMINATED-GLASS TYPES

- A. Glass Type : Low-e-coated, tinted, insulating laminated glass.
 - 1. Overall Unit Thickness: **1-5/16 inch**
 - 2. Thickness of Outdoor Lite: As required to meet design wind pressures..
 - 3. Outdoor Lite: Tinted **heat-strengthened float glass or fully tempered float glass as required.**
 - 4. Interspace Content: **Air.**
 - 5. Indoor Lite: Clear laminated glass with two plies of **glass as required to meet testing requirements..**
 - a. Thickness of Each Glass Ply: As required.
 - b. Interlayer Thickness: As required.
 - 6. Low-E Coating: **Pyrolytic or sputtered on second or third surface.**
 - 7. Provide safety glazing labeling.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 - 2. Presence and functioning of weep systems.
 - 3. Minimum required face and edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that will leave visible marks in the completed work.

3.3 GLAZING, GENERAL

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

glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.

2. Provide 1/8-inch (3-mm) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

- H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- J. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

3.4 SEALANT GLAZING (WET)

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

3.5 CLEANING AND PROTECTION

- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.
- E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 08800

SECTION 08950 TRANSLUCENT CANOPY SYSTEMS

PART 1 GENERAL

1.01 RELATED DOCUMENTS:

- A. The General Conditions of the Contract, including Supplementary Conditions and Division 1 – General Requirements, apply to the work of this Section.

1.02 Scope:

- A. The design, manufacture and installation of an aluminum and polycarbonate insulating translucent system. A complete assembly of extruded cellular UV resistant polycarbonate glazing panels incorporated into a complete aluminum framing system, tested and warranted by the manufacturer.
- B. All anchors, brackets, and hardware attachments necessary to complete the specified structural assembly, when included within project scope.
- C. Weatherability and water-tightness performance requirements.
- D. All flashings up to adjoining work are also required as part of the system and shall be included, unless specifically noted as being supplied by others.
- E. Experienced labor with supervision to complete the entire system installation.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Division 5 - Structural Steel.
- B. Division 7 - Sealants.

1.04 QUALITY ASSURANCE.

- A. Materials and Products shall be manufactured by a company continuously and regularly employed in the manufacture of glazing systems using cellular polycarbonate panel systems for a period of at least ten (10) years. Manufacturers shall provide a list of at least ten (10) projects having been in place a minimum of five (5) years.
- B. Erection shall be by the manufacturer or an installer experienced in erection of systems of the type specified.
- C. The manufacturer shall be responsible for the configuration and fabrication of the complete system, and will ensure that it fully meets all requirements of this specification.

1.05 SUBMITTALS:

- A. Submit three (3) each of the following to the Architect for review at the same time the Shop Drawings are submitted.
 - 1. Each aluminum frame section – 6" long.
 - 2. Samples of aluminum illustrating the specified finish.
 - 3. Glazing gaskets – 6" long – each type.

Community Center Addition and Renovations
Gulf Breeze, Florida

4. Samples of glazing, each minimum 6" x 6", in specified color.
5. Test Data.
6. Product Literature.

B. Shop Drawings

1. Shop drawings shall include plans, elevations, sections and details of the system. Flashings, sealants and anchorage details shall be clearly indicated.
2. Note gauges of brake metals, finishes of frames and hardware. Also note dimensions (if known) of the work to be performed by other trades.
3. Label fastening devices as to type and spacing.

C. Product Data

1. Submit proposed manufacturer's catalog cuts and specifications to clearly illustrate and describe the submitted system. See Article 1.04D and Article 2.01

1.06 Delivery, Storage and Handling

- A. Deliver materials to the jobsite in the manufacturer's original and unopened containers and bearing labels as to type of material and manufacturer's name. Delivered materials shall be identical to approved samples.
- B. Store materials under cover in a dry, clean location, off the ground. Remove from the jobsite any materials that are damaged or otherwise not suitable for installation and replace with acceptable materials.

1.07 Warranty

- A. Warranty required as per Section 4.01, following.

Part 2 PRODUCTS

2.01 Materials

- A. The Aluminum Members of the System shall conform to the following:
 1. The extrusions shall be 6063-T5, 6005-T5 or 6105-T5 alloy and temper. All sections shall be formed true to detail and free from defects impairing appearance, strength or durability.
 2. The rabbet depth at the edges of the framing shall (at an absolute minimum) be based on $\frac{3}{4}$ " minimum engagement plus $\frac{1}{8}$ " for cutting tolerance plus $.005 \times$ that glazing dimension (in inches) which affects that rabbet. For example, a 100" long glazing will require a minimum of $\frac{3}{4}" + \frac{1}{8}" + (.005 \times 100) = 1.475"$. Under no circumstances, even in the coldest possible weather, should panel engagement be less than $\frac{3}{4}"$.

Community Center Addition and Renovations
Gulf Breeze, Florida

3. Gasketing is to be elastomeric, incorporating a low friction coating on the surfaces that contact the glazing. Gasketing shall be tested for chemical compatibility with the glazing, and test reports evidencing same shall be presented to the Architect.
4. Fasteners, where exposed, shall be stainless steel, 300 Series, with stainless backed neoprene washers. Where not exposed, they may be stainless or zinc-plated steel in accordance with ASTM Specifications A165-55 or A164-55.
5. Exposed surfaces of the aluminum-framing members shall be finished as follows:

Anodized: 204 R1
Anodize Color: Clear

6. Aluminum and/or galvanized steel flashings and other brake metal components shall be minimum .040" thick (if aluminum) or 24 ga. thick (if steel) (thicker where so specified on the drawings). The finish on this metal shall match as closely as possible that which is on the extruded aluminum framing members.
7. Attachment of glazing sheets to the transverse structural elements (i.e. purlins or girts) or to structural members parallel to the translucent panels shall be achieved by means of:

Two-piece sliding clips, consisting of an aluminum base portion and a stainless steel upper portion which constrains the polycarbonate sheets. The base shall be designed so as to hold the polycarbonate panels safely above the substrate as well as above the heads of the fasteners which attach it to the substrate. In addition, this base will incorporate elastomeric cushions on which the panels can rest and/or move.

- B. The polycarbonate glazing panels and battens for the system shall conform to the following:

1. Appearance:
 - A. The extruded panels shall be uniform in color with an integral extruded multi-cell core. The panel's exterior skins shall be interconnected and spaced apart by supporting continuous ribs, perpendicular to the skins. In addition, the space between the two exterior skins, in a cross section, shall be divided by two parallel intermediate walls.
 - B. Panels shall consist of a polycarbonate resin with permanent, co-extruded, ultraviolet protective layers on both sides of the panels. These protective layers shall be co-extruded by the manufacturer during the original extrusion of the panel and shall be a permanent part of both the interior and exterior of the panels. Post-applied coating or films of dissimilar materials are unacceptable. Battens shall be of similar polycarbonate materials and shall be surface coated with a similar protective coating.
 - C. Both the panels and the battens shall be formed using resin which contains small glass beads. These beads provide diffusion of the light as it passes through the panels.
 - D. Panel thickness shall be a minimum .63" with the upright portion of standing seams incorporated into each side.

Community Center Addition and Renovations
Gulf Breeze, Florida

E. Panel Width shall not exceed 2'.

2. Translucent Panel System:

- A. Panel shall be extruded in one single length. Transverse connections are not acceptable. The panels shall incorporate standing seams which are extruded at each side of the panels. Welding or gluing or otherwise attaching standing seams is not acceptable.
- B. Perimeter framing and mullions are to be dry glazed profiles, using no sealant, welding, or adhesives.
- C. Perimeter framing members, exclusive of cover caps, □ shall □ shall not incorporate an integral structural polyurethane thermal break.
- D. In general, concealed fasteners are to be used for all aluminum framing.
- E. Fasteners which are exposed to the weather shall be 300 Series stainless steel.
- F. In system construction, the use of adhesives, plastic welding, or sealants is not allowed.
- G. Free thermal movement of the panels shall be allowed to occur without compromising the weathertightness of the completed system.

3. Air Infiltration:

- A. Per ASTM D-283 at a test pressure of 6.24 PSF, maximum air infiltration shall be 0.003 CFM/sq. ft. of glazing area.

4. Water Penetration:

- A. There shall be no water penetration when tested vertically per ASTM E-331 at test pressure of 20 PSF.

5. Maintenance:

- A. The system shall require no scheduled re-coating to maintain its weathering or structural performance or for UV protection.
- B. Refer to Section 3.03 for cleaning and protection procedures.

6. Thermal Performance:

- A. Light Transmission: clear = 65%

7. Flammability:

- A. The system shall incorporate approved light-transmitting panels, with a CC1 fire rating classification as tested per ASTM D-635 or equivalent.

8. Loading:

Community Center Addition and Renovations
Gulf Breeze, Florida

- A. The panel system shall be capable of meeting the design load for this project based on relevant code requirements and laboratory testing per ASTM E-330 shall evidence this fact.
- 9. The interior cells of the cellular polycarbonate sheets shall be blown clean prior to being sealed. The top and bottom of each sheet shall be sealed with an air permeable filter tape.
- 10. The open end of each panel shall rest on a continuous metal setting fin which is designed to allow atmospheric air to reach the air permeable tape at the bottoms of the panels. Setting blocks, or any other method that would tend to restrict air access, are not acceptable.
- 11. Glazing shall be installed in accordance with panel and system manufacturer's guidelines.
- 12. The color of the standing seam panels and the polycarbonate snap-on battens shall be:

Clear
- C. Fasteners
 - 1. Bolts, anchors and other fastening devices shall be as required for the strength of the connections and shall be suitable for conditions encountered. Washers shall be of the same metals as fasteners.
 - 2. Fasteners exposed to the weather shall be 300 Series stainless steel and shall utilize stainless steel washers with neoprene seals.
 - 3. Concealed fasteners shall be stainless steel or zinc plated steel as per ASTM A-165.

2.02 Workmanship

- A. Carefully and accurately design, fabricate and assemble work with proper provision for thermal contraction and expansion. Work shall conform to profiles and sections noted on the shop drawings. Work shall be assembled with joints in a neat and finished manner.
- B. Fasteners: Of a strength and spacing sufficient to meet the testing requirements as stated in Section 1.03B and to resist the specified load requirements or code requirements.
- C. Protect contact points between unprotected dissimilar metals (except stainless steel) using continuous separators of FRP or PVC tape (or approved equal).

2.03 Design Loading

- A. Design load for this project is in accordance with structural drawings and Florida Building code/ ASCE 7..

Part 3 EXECUTION

3.01 Examination

- A. All submitted opening sizes, dimensions and tolerances are to be field verified by the installer unless otherwise stipulated.

- B. Installer to examine site conditions to verify readiness. Notify general contractor or owner about any defects requiring correction. Do not work until conditions are satisfactory.

3.02 Installation

- A. Install components in strict accordance with manufacturer's instructions and approved shop drawings. Use proper fasteners and hardware for material attachments as specified.
- B. Use methods of attachment to structure which include provisions for thermal movement.
- C. Remove all protective coverings on polycarbonate panels during or immediately after installation.

3.03 Cleaning and Protection

- A. During installation, protect exposed surfaces against accumulation of paint, caulking, disfiguration and damage.
- B. Follow panel manufacturer's instructions when cleaning exposed panel surfaces.
- C. Follow panel manufacturer's guidelines when removing foreign substances from panel surfaces. Use only solvents that are deemed acceptable for use.
- D. The exterior shall be cleaned as each phase of the work is completed.
- E. Before final acceptance, repair and/or replace any defective materials or work.

Part 4 RESPONSIBILITIES OF OWNER AND MANUFACTURER

4.01 Warranty

- A. The Manufacturer of the window/skylight hereby warrants to the Building Owner that, if within five (5) years from the last date of substantial installation or the date of sale of the window/skylight system, the Owner notifies the Manufacturer in writing that the window/skylight system leaks due to defects in the window/skylight system, Manufacturer will, at its option, repair or provide replacements only for those components of the window/skylight system found to be defective. In no event shall Manufacturer have liability for special, indirect, consequential or punitive damages. Anything in this warranty notwithstanding, the glazing panels and battens utilized in the window/skylight system shall be covered only by the Standard Warranty of the glazing manufacturer.
- B. The above-stated warranty shall be invalid in the event of structural movement of the building(s), negative air pressure inside the building(s), acts of God, alteration to the window/skylight system by anyone other than the Manufacturer or its authorized representative, or abuse/unreasonable use of the window/skylight system. Further, this warranty shall be invalid in the event of non-payment of the invoice(s) covering the purchase of the window/skylight system within the terms provided in those invoices.
- C. Manufacturer makes no warranties or representations, expressed or implied, which extend beyond this warranty and specifically disclaims all other warranties, including but not limited to warranties of merchantability and fitness for a particular purpose.

END OF SECTION 09850

SECTION 09220 - PORTLAND CEMENT PLASTER

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Exterior portland cement plasterwork (stucco) on **metal lath** plaster bases.
- B. See Division 5 Section "Cold-Formed Metal Framing" for structural, load-bearing (transverse and axial) steel studs and joists that support lath and portland cement plaster.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For each type of **factory-prepared, colored, textured** finish coat indicated; **12 by 12 inches (305 by 305 mm)**, and prepared on rigid backing.

1.3 QUALITY ASSURANCE

- A. Mockups: Before plastering, install mockups of at least **100 sq. ft. (9 sq. m)** in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Install mockups for each type of finish indicated.
 - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.4 PROJECT CONDITIONS

- A. Comply with ASTM C 926 requirements.
- B. Exterior Plasterwork: Apply plaster when ambient temperature is greater than **40 deg F (4.4 deg C)**.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.

2.2 METAL LATH

- A. Expanded-Metal Lath: ASTM C 847 with ASTM A 653/A 653M, **G60 (Z180)**, hot-dip galvanized zinc coating.
 1. Diamond-Mesh Lath: **Self-furring**.
 - a. Weight: **2.5 lb/sq. yd. (1.4 kg/sq. m)**.

2.3 ACCESSORIES

- A. General: Comply with ASTM C 1063 and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.
- B. Plastic Trim: Fabricated from high-impact PVC.
 1. Cornerbeads: With perforated flanges.
 - a. **Small-nose** style; use unless otherwise indicated.
 2. Casing Beads: With perforated flanges in depth required to suit plaster bases indicated and flange length required to suit applications indicated.
 - a. **Square-edge** style; use unless otherwise indicated.
 3. Control Joints: One-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.

2.4 MISCELLANEOUS MATERIALS

- A. Water for Mixing: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.
- B. Fiber for Base Coat: Alkaline-resistant glass or polypropylene fibers, **1/2 inch (13 mm)** long, free of contaminants, manufactured for use in portland cement plaster.
- C. Bonding Compound: ASTM C 932.
- D. Steel Drill Screws: For metal-to-metal fastening, ASTM C 1002 or ASTM C 954, as required by thickness of metal being fastened; with pan head that is suitable for application; in lengths required to achieve penetration through joined materials of not fewer than three exposed threads.
- E. Fasteners for Attaching Metal Lath to Substrates: Complying with ASTM C 1063.

2.5 PLASTER MATERIALS

- A. Portland Cement: ASTM C 150, Type I.
 - 1. Color for Finish Coats: **White**.
- B. Lime: ASTM C 206, Type S; or ASTM C 207, Type S.
- C. Sand Aggregate: ASTM C 897.
 - 1. Color for Job-Mixed Finish Coats: **White**.
- D. Acrylic-Based Finish Coatings: Factory-mixed acrylic-emulsion coating systems, formulated with colorfast mineral pigments and fine aggregates; for use over portland cement plaster base coats. Include manufacturer's recommended primers and sealing topcoats for acrylic-based finishes.
 - 1. **Available]Products:**
 - a. Bonsal, W. R. Co.; <Insert product name or designation>.
 - b. ChemRex, SonoWall Stucco Systems; <Insert product name or designation>.
 - c. Dryvit Systems, Inc.; <Insert product name or designation>.
 - d. Parex Incorporated; <Insert product name or designation>.
 - e. Pleko Products, Inc.; <Insert product name or designation>.
 - f. Senergy, Inc.; <Insert product name or designation>.
 - g. Sto Corp.; <Insert product name or designation>.
 - h. Stuc-O-Flex International, Inc.; <Insert product name or designation>.
 - 2. Color: **As selected by Architect from manufacturer's full range.**

2.6 PLASTER MIXES

- A. General: Comply with ASTM C 926 for applications indicated.
 - 1. Fiber Content: Add fiber to base-coat mixes after ingredients have mixed at least two minutes. Comply with fiber manufacturer's written instructions for fiber quantities in mixes, but do not exceed [**1 lb of fiber/cu. yd. (0.6 kg of fiber/cu. m)**] <Insert value> of cementitious materials. Reduce aggregate quantities accordingly to maintain workability.
- B. Portland Cement Base-Coat Mixes:
 - 1. Over **Concrete Unit Masonry**: Single base coats for two-coat plasterwork as follows:
 - a. For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material (sum of separate volumes of each component material).

- C. Factory-Prepared Finish-Coat Mixes: For **acrylic-based finish coatings**, comply with manufacturer's written instructions.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.
- B. Prepare solid-plaster bases that are smooth or that do not have the suction capability required to bond with plaster according to ASTM C 926.

3.2 INSTALLATION, GENERAL

3.3 INSTALLING METAL LATH

- A. Expanded-Metal Lath: Install according to ASTM C 1063.

3.4 INSTALLING ACCESSORIES

- A. Install according to ASTM C 1063 and at locations indicated on Drawings.
- B. Reinforcement for External Corners:
 - 1. Install lath-type external-corner reinforcement at exterior locations.
 - 2. Install cornerbead at **and exterior** locations.
- C. Control Joints: Install control joints
 - 1. As required to delineate plasterwork into areas (panels) of the following maximum sizes:
 - a. Vertical Surfaces: see elevations.
 - 2. Where control joints occur in surface of construction directly behind plaster.
 - 3. Where plasterwork areas change dimensions, to delineate rectangular-shaped areas (panels) and to relieve the stress that occurs at the corner formed by the dimension change.

3.5 PLASTER APPLICATION

- A. General: Comply with ASTM C 926.
- B. Bonding Compound: Apply on **unit masonry** plaster bases.

- C. Acrylic-Based Finish Coatings: Apply coating system, including primers, finish coats, and sealing topcoats, according to manufacturer's written instructions.

3.6 CUTTING AND PATCHING

- A. Cut, patch, replace, and repair plaster as necessary to accommodate other work and to restore cracks, dents, and imperfections. Repair or replace work to eliminate blisters, buckles, crazing (check cracking), dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

END OF SECTION 09220

SECTION 09250 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:

1. Interior gypsum board.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Samples: For the following products:

1. Trim Accessories: Full-size Sample in 12-inch- (300-mm-) long length for each trim accessory indicated.

- C. LEED Submittals:

1. Product Data for Credit MR 4.1 and MR 4.2: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content.

- a. Include statement indicating costs for each product having recycled content.

2. Product Data for Credit EQ 4.1: For adhesives used to laminate gypsum board panels to substrates, including printed statement of VOC content.

1.3 QUALITY ASSURANCE

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

PART 2 - PRODUCTS

2.1 RECYCLED CONTENT OF GYPSUM PANELS

- A. Provide gypsum panel products with recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content constitutes a minimum of 50 percent by weight.

2.2 INTERIOR GYPSUM BOARD

- A. General: Complying with ASTM C 36/C 36M or ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Gypsum Co.
 - b. BPB America Inc.
 - c. G-P Gypsum.
 - d. Lafarge North America Inc.
 - e. National Gypsum Company.
 - f. PABCO Gypsum.
 - g. Temple.
 - h. USG Corporation.
- B. Regular Type:
1. Thickness: 5/8.
 2. Long Edges: **Tapered**.
- C. Type X:
1. Thickness: **5/8 inch (15.9 mm)**.
 2. Long Edges: **Tapered**.

2.3 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
1. Material: **Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.**
 2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. L-Bead: L-shaped; exposed long flange receives joint compound.
 - d. U-Bead: J-shaped; exposed short flange does not receive joint compound.
 - e. Expansion (control) joint.
 3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 4. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Fry Reglet Corp.
 - b. Gordon, Inc.
 - c. Pittcon Industries.

5. Finish: **Corrosion-resistant primer compatible with joint compound and finish materials specified.**

2.4 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 1. Interior Gypsum Wallboard: Paper.
- C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 1. Prefilling: At open joints, **rounded or beveled panel edges**, and damaged surface areas, use setting-type taping compound.
 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use **drying-type, all-purpose** compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 3. Fill Coat: For second coat, use **setting-type, sandable topping** compound.
 4. Finish Coat: For third coat, use **setting-type, sandable topping** compound.

2.5 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
 1. Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 1. Use screws complying with ASTM C 954 for fastening panels to steel members from **0.033 to 0.112 inch** (0.84 to 2.84 mm) thick.
- D. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
 2. Recycled Content: Provide blankets with recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content constitutes a minimum of 50 percent by weight.
- E. Acoustical Sealant: As specified in Division 7 Section "Joint Sealants."

1. Provide sealants that have a VOC content of **250** g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

F. Thermal Insulation: As specified in Division 7 Section "Building Insulation."

2.6 TEXTURE FINISHES

A. Primer: As recommended by textured finish manufacturer.

1. Texture: **Fine**.

B. Aggregate Finish: Water-based, job-mixed, aggregated, drying-type texture finish for spray application.

C. Acoustical Finish: Water-based, chemical-setting or drying-type, job-mixed texture finish for spray application.

PART 3 - EXECUTION

3.1 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide **1/4- to 1/2-inch- (6.4- to 12.7-mm-)** wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

D. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members, or provide control joints to counteract wood shrinkage.

3.2 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Regular Type: **Vertical surfaces, unless otherwise indicated.**
2. Type X: **Where required for fire-resistance-rated assembly.**
3. Moisture- and Mold-Resistant Type: **As indicated on Drawings.**

3.3 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints **according to ASTM C 840 and in specific locations approved by Architect for visual effect.**
- C. Interior Trim: Install in the following locations:
 - 1. Cornerbead: Use at outside corners.
 - 2. LC-Bead: Use **at exposed panel edges.**

3.4 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints, **rounded or beveled edges**, and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below:
 - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 - 2. Level 4: **At panel surfaces that will be exposed to view, unless otherwise indicated.**
 - a. Primer and its application to surfaces are specified in other Division 9 Sections.

3.5 APPLYING TEXTURE FINISHES

- A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.
- B. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture free of starved spots or other evidence of thin application or of application patterns.
- C. Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture-finish manufacturer's written recommendations.

3.6 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

- B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09250

SECTION 09510 - ACOUSTICAL CEILINGS
PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Suspended metal ceiling grid system.
 - 2. Acoustical panels.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

- A. ASTM International (ASTM):
 - 1. A641 - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
 - 2. C635 - Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
 - 3. C636 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
 - 4. E1264 - Standard Classification of Acoustical Ceiling Products.
- B. Ceiling and Interior Systems Construction Association (CISCA) - Ceiling Systems Handbook.
- C. Underwriters Laboratories, Inc. (UL) - Fire Resistance Directory.

1.3 SUBMITTALS

- A. Submittals for Review:
 - 1. Samples:
 - a. 12 x 12] inch acoustical panel samples.
 - b. 6 inch long suspension system samples showing each profile.
- B. Quality Control Submittals:
 - 1. Certificates of Compliance: Certification from an independent testing laboratory that acoustical panels meet fire hazard classification requirements.
- C. Sustainable Design Submittals:
 - 1. Recycled Content.
 - 2. Regional Materials.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 5 years documented experience in work of this Section.
- B. Fire Hazard Classification: Class A rated, tested to ASTM E1264.

1.5 PROJECT CONDITIONS

- A. Environmental Requirements: Install in approximately same conditions of temperature and

humidity as will prevail after installation.

1.6 MAINTENANCE

- A. Extra Materials: 2 percent square feet of acoustical panels.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers - Suspension System:
1. Armstrong World Industries, Inc. (www.armstrong.com/commceilingsna)
 2. Chicago Metallic Corporation. (www.chicago-metallic.com)
 3. USG Interiors, Inc. (www.usg.com)
- B. Acceptable Manufacturers - Acoustical Units:
1. Armstrong World Industries, Inc. (www.armstrong.com/commceilingsna)
 2. Certainteed Corporation (www.certainteed.com)
 3. USG Interiors, Inc. (www.usg.com)
- C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Suspension Grid System:
1. ASTM C635, intermediate duty, die cut, interlocking ends.
 2. Grid type: Exposed T.
 3. Material: Galvanized steel.
 4. Runners: 1-1/2 inches high, 15/16 inch exposed width, flush profile.
 5. Perimeter molding: Angle shape.
 6. Finish: Factory applied enamel paint, sprayed and baked, white color
 7. Accessories: clips, splices.
 8. Recycled content: Minimum 25 percent, with minimum 15 percent classified as post consumer.
- B. Acoustical Panels: ACT 1:
1. Source: Medium Texture mineral fiber.
 2. Size: 24 x 24 inches x 3/4 inch thick.
 3. Edge configuration: Reveal.
 4. Performance requirements: Tested in accordance with ASTM E1264.
 5. Recycled content: Minimum 70 percent, with minimum 25 percent classified as post consumer.
- C. Acoustical Panels: ACT 2:
1. Source: Gypsum board with vinyl face.
 2. Size: 24 x 24 inches x 1/2 inch thick.
 3. Edge configuration: Square.
 4. Performance requirements: Tested in accordance with ASTM E1264.
 5. Recycled content: Minimum 70 percent, with minimum 25 percent classified as post consumer.

- D. Acoustical Panels: ACT 3:
 - 1. Source: Impact resistant mineral fiber, medium texture.
 - 2. Size: 24 x 24 inches x 3/4 inch thick.
 - 3. Edge configuration: Reveal.
 - 4. Performance requirements: Tested in accordance with ASTM E1264.
 - 5. Recycled content: Minimum 70 percent, with minimum 25 percent classified as post consumer.
- E. Acoustical Panels: ACT 4:
 - 1. Source: Impact resistant mineral fiber, medium texture.
 - 2. Size: 24 x 24 inches x 3/4 inch thick.
 - 3. Edge configuration: Square.
 - 4. Performance requirements: Tested in accordance with ASTM E1264.
 - 5. Recycled content: Minimum 70 percent, with minimum 25 percent classified as post consumer.

2.3 ACCESSORIES

- A. Support Channels: Galvanized steel; size and type to suit application.
- B. Hanger Wire:
 - 1. ASTM A641, minimum 12 gage galvanized steel.
 - 2. Recycled content: Minimum 75 percent, with minimum 40 percent classified as post consumer.
- C. Hold Down Clips: Minimum 24 gage spring steel, manufacturer's standard profile.
- D. Impact Clips (New Gymnasium): Minimum 24 gage spring steel, manufacturer's standard profile.
- E. Touch-Up Paint: Color to match acoustical panels and suspension grid.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install ceilings in accordance with ASTM C636 and CISCA Handbook.
- B. Minimize panels less than one half size.
- C. Install molding around perimeters and abutting surfaces. Miter molding at exterior corners; cut flanges and bend web to form interior corners.
- D. Space hanger wires maximum 48 inches on center. Install additional hangers where required to support light fixtures and ceiling supported equipment.

- E. Do not suspend hangers directly from metal deck. Attach steel channel horizontally to adjacent framing members; place hanger at regular spacing.
- F. Hang suspension system independent of walls, columns, ducts, pipes, and conduit.
- G. Where ducts or other equipment prevent regular spacing of hangers:
 - 1. Reinforce nearest related hangers to span extra distance, or:
 - 2. Suspend steel channel horizontally beneath duct or equipment; place hanger at regular spacing.
- H. Install main tees at maximum 48 inches on center.
- I. Install cross tees to form 24 x 24 inch modules. Lock cross tees to main tees.
- J. Support ends of tees on flange of perimeter molding.
- K. Place acoustical panels with edges resting flat on suspension grid.
- L. Cutting Acoustic Units:
 - 1. Cut to fit irregular grid and perimeter edge trim and around penetrations.
 - 2. Locate cuts to be concealed.
 - 3. Cut and field paint exposed edges of reveal edge units to match factory edge.
- M. Place impact clips over cross tees at mid point of each module.
- N. Installation Tolerances: Ceilings level to 1/8 inch in 12 feet measured in any direction.

3.2 ADJUSTING

- A. Touch up minor scratches and abrasions to match factory finish.

END OF SECTION

SECTION 09624 RESILIENT FLOORING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes: Resilient athletic surfacing, including recycled rubber flooring
- B. Related Sections: Section(s) related to this section include:
 - 1. Section 03 – Concrete Substrate.

1.02 REFERENCES

- A. Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. The Standards listed here are identified with a designation number, title or other designation established by the issuing authority.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM D2240 Hardness Shore A Durometer
 - 2. ASTM D412 Tensile Strength
 - 3. ASTM C501 Taber Abrasion (H-22)
 - 4. ASTM E648 Flammability (Critical Radiant Flux)
 - 5. ASTM D395B Compression Set Under Force
 - 6. ASTM F970 Static Load
 - 7. ASTM D3676 Density Foam Test
 - 8. ASTM D5116 Material Emissions – VOC
 - 9. ASTM F150 Electrical Resistance (Burroughs)
 - 10. ASTM D2047 Static Coefficient of Friction (James Machine Method)
 - 11. ASTM F1914 Short-Tem and Residual Indentation
- C. Other referenced documents
 - 1. LEED-NC version 3

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide resilient rubber athletic surfacing system and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants and leveling compounds, all of which have been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with the Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product data: Submit product data, including manufacturer's specification sheet and installation instructions for specified products. Include methods of installation and substrate preparation for each type of substrate.
 - 1. Sustainable Design Submittals: For projects requiring LEED submittal based on LEED-NC version 3 Submit documentation substantiating that FLOORING contains a minimum of 20% pre-consumer and a minimum of 40% post-consumer recycled content and therefore contributes to Materials & Resources Credit 4.
 - 2. Submit documentation substantiating that adhesive is has a low VOC content and therefore contributes to Indoor Environmental Quality Credit 4.1.
 - 3. Submit documentation substantiating that flooring contributes to Indoor Environmental Quality Credit 4.3.
 - 4. Submit documentation substantiating if the project is located within 500 miles of the manufacturing facility and therefore contributes to Materials & Resources Credit 5.
- C. Samples: Submit samples for each type and color of resilient rubber athletic surfacing and accessories required. Provide samples of flooring materials.
- D. Quality Assurance Submittals: (1) Certified test reports showing compliance with specified performance characteristics and physical properties, (2) Bond and moisture tests with location diagrams and results, and (3) Manufacturer's Installation Instructions.
- E. Closeout Submittals: (1) Cleaning & Maintenance Data (Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance), and (2) Warranty.

1.05 QUALITY ASSURANCE

- A. Installer: Installer should be highly experienced in performing work of this section, having previously done work similar to that required for this project.

1.06 SEQUENCING/SCHEDULING

- A. Ordering: Comply with Manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- B. Delivery: Deliver materials in Manufacturer's original, unopened, undamaged packaging.
- C. Storage: Store materials at temperature and in humidity conditions recommended by manufacturer and protect from exposure to harmful weather conditions. Store resilient athletic surfacing materials in spaces where they will be installed for at least 48 hours before beginning installation.
- D. Installation: Except as otherwise indicated herein, sequencing or scheduling for performance of work of this section in relation with other work is Contractor's option. Install resilient athletic surfacing and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieved bond with adhesive as determined by the resilient recycled rubber

flooring manufacturer's recommended bond and moisture test. Do not take tests later than ten days prior to scheduled installation. Notify Architect immediately of unsatisfactory conditions.

1.07 PROJECT CONDITIONS

- A. Temperature: Maintain minimum temperature as recommended by Manufacturer, but not less than 65 degrees Fahrenheit (18 degrees Celsius) in spaces to receive resilient athletic surfacing for at least 48 hours prior to installation, during installation and for not less than 48 hours after installation. Subsequently, maintain minimum temperature of 55 degrees Fahrenheit (13 degrees Celsius) in areas where work is completed.
- B. Moisture: Prior to floor finish installation, take moisture tests on all concrete floors regardless of age or grade level. The test shall be a calcium chloride test. Conduct one test for every 1,000 or less square feet of resilient athletic surfacing. Conduct tests around the perimeter of the room, at columns and where moisture may be evident. The moisture emission from the concrete shall not exceed 3.0 pounds per 1,000 square feet per 24 hours. Submit a diagram of the area showing the location and results of each test to the Architect, Owner, General Contractor. If the test results exceed the limitations do not proceed with the installation until the problem has been corrected.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Resilient Flooring allowance – provide \$35 per square yard installed allowance including materials, labor and accessories.

1.

PART 3 – EXECUTION

3.01 SUBSTRATE PREPARATION

- A. Examine substrates and conditions where resilient rubber athletic surfacing will be installed. Require installer to inspect sub-floor surfaces to determine that they are satisfactory. A satisfactory sub-floor surface is defined as one that is dry, smooth, and free from cracks, holes, ridges, sealers or coatings preventing adhesive bond and other defects impairing performance or appearance. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by flooring manufacturer. Do not proceed with installation until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Preparations: (1) Leveling: Use leveling and patching compounds as recommended by flooring manufacturer for filling small cracks, holes and depressions and leveling sub-floors. This contractor shall be responsible for leveling new or existing floors whose surface varies up to 5/16". Notify Owner, Architect and General Contractor in writing where substrate varies more than above before proceeding with the work. (2) Cleaning: Remove coatings from sub-floor surfaces that would prevent adhesive bond, including curing compounds incompatible with resilient athletic surfacing adhesives, paints, oils, waxes and sealers. Broom clean or vacuum surfaces to be covered, and inspect sub-floor. (3) Priming: Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's direction.

- B. Field Verification: Field verify, prior to installation, exact layout dimensions of all seams, floor patterns, grain directions and insets with Architect. Start of work without Architect approval of field verification is not permitted and unauthorized installations shall be replaced at Contractors expense.
- C. General:
 - 1. Strictly comply with manufacturer's installation instructions and recommendations.
 - 2. Adhere resilient athletic surfacing to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.
 - 3. Where moveable partitions are shown, install resilient athletic surfacing before partitions are erected.
 - 4. Extend flooring into toe spaces, door reveals and into closet and similar openings. Scribe, cut and fit resilient athletic surfacing to permanent fixtures, built-in furniture and cabinets, pipes, outlets and permanent columns, walls and partitions.
 - 5. Maintain reference markers, holes or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on sub-floor. Use chalk or other nonpermanent-marking device.
 - 6. Tightly cement edges to perimeter of floor around covers and to covers. Tightly cement flooring to sub-base without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks or other surface imperfections.
- D. Installing resilient athletic surfacing rolls:
 - 1. Match rolls for color and pattern by using rolls from cartons in same sequence as manufactured and packaged if so numbered.
 - 2. Lay rolls to provide as few seams as possible with economical use of materials. Match edges for color shading and pattern at seams in compliance with manufacturer's recommendations.
 - 3. On masonry surfaces or other similar irregular vertical substrates, fill voids between metal top edge strip cove cap and vertical surface with manufacturer's recommended adhesive filler material.
 - 4. On all floor penetrations, cutouts and edge conditions, such as doorframes, fill voids between sheet flooring and other surfaces with sealant recommended by sheet flooring manufacturer.

3.03 CLEANING AND PROTECTION

- A. General Cleaning: Refer to Manufacturer's Cleaning and Maintenance Instructions.
- B. Post Installation Cleaning: Sweep or vacuum floor thoroughly. Do not wash floor until time period recommended by resilient flooring manufacturer has elapsed to allow resilient athletic surfacing to become well sealed in adhesive. Damp mop floor being careful to remove marks and excessive soil. Remove any excess adhesive or other surface blemishes, using appropriate, non-abrasive cleaner recommended by flooring manufacturer.

- C. Protection: Protect installed product and finish surfaces from damage during construction and until acceptance. Cover resilient flooring with un-dyed, un-treated building paper until inspection for Substantial Completion.
- D. Inspection Cleaning: Clean resilient athletic surfacing not more than four days prior to date scheduled for inspections intended to establish date of Substantial Completion in each area of project. Clean resilient flooring by method recommended by resilient flooring manufacturer.
- E. Owner's Personnel: Instruct Owner's personnel in proper maintenance procedures.

3.04 EXTRA MATERIALS

- A. General: Furnish extra materials from same manufactured lot as materials installed. Deliver to Owner enclosed in protective packaging with appropriate identifying labels.
- B. Resilient rubber rolls: Furnish not less than five linear yards for each type, color and pattern installed.

END OF SECTION

SECTION 09644 WOOD ATHLETIC FLOORING

PART 1: GENERAL

1.1 CONDITIONS AND REQUIREMENTS

A. The General Conditions, Supplementary Conditions, and Division 1- General Requirements apply.

1.2 REFERENCES

A. Maple Flooring Manufacturers Association (MFMA).

1.3 SYSTEM DESCRIPTION

A. Provide an athletic wood flooring system consisting, in general, of wood laminate subflooring, maple flooring, vapor retarder, finishes, painted game lines, and wall base.

B. Provide an athletic wood flooring system, which has been manufactured to maintain performance criteria, stated by manufacturer without defects, damage or failure.

1.4 SUBMITTALS

A. Product data, including manufacturer's information for specified products.

B. Selection and verification samples for finishes, colours and textures.

C. Shop drawings showing layout, profiles, product components and finishing details.

D. Installation and maintenance instructions as published by the manufacturer.

1.5 QUALITY ASSURANCE

A. The manufacturer must have experience in the manufacturing of athletic wood-flooring systems.

B. Installer must have performed installations of the same scale in the last three years.

C. Installer to be recognized and approved by the flooring manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Materials must be delivered in manufacturer's original, unopened and undamaged containers with identification labels intact.

B. Store material protected from exposure to harmful weather conditions, on a clean, dry, flat surface protected from all possible damage.

C. Recommended environmental conditions for storage are a relative temperature in the range of 65° F to 75° F (18° C to 24° C), and ambient humidity in the range of 35% to 50%.

D. Material shall be stored in the area where the installation is to take place, a week (7 days) prior to installation, so that it can acclimate to area conditions.

Community Center Addition and Renovations
Gulf Breeze, Florida

E. Material should not suffer excessive damage during handling (i.e. edge chipping, excessive warping etc).

1.7 SITE CONDITIONS

A. Maintain stable room and subfloor environmental conditions for a period of seven (7) days prior, during and seven (7) days after installation.

-Recommended temperature range: 65° F to 75° F (18° C to 24° C).

-Recommended relative humidity range: 35% to 50%.

B. Installation to be carried-out no sooner than the specified curing time of concrete subfloor (normal density concrete curing time is approximately 28 days for development of design strength).

C. Moisture vapor emission content of the concrete slab must not exceed 7 lbs/1000 ft² per 24 hrs when using the Calcium Chloride test as per ASTM F 1869-98.

D. Installation of athletic wood flooring will not commence unless all other finishes in the building have been completed and the HVAC systems are operational and able to sustain stable environmental conditions (as specified).

1.8 WARRANTY

A. Provide manufacturer's standard warranty.

B. The athletic wood flooring is warranted to be free from manufacturing defects for a period of one (1) year from the date of shipment from the manufacturer.

1.9 MAINTENANCE AND REPAIR

A. Provide additional amount of approximately 2% of the total floor surface, of each type.

B. Repair material must be from the same lot as material supplied for initial installation.

C. Maintain surface as per MFMA published recommendations for wood floor maintenance.

PART 2: PRODUCT

2.1 MANUFACTURERS

A. Equal to MONDO USA (Southeast Division), 1140 Hammond Drive N.E., Suite B2190, Atlanta, GA

2.2 AIR ZONE MAPLE SYSTEM

A. Description: Prefabricated athletic wood floor system as manufactured by MONDO AMERICA INC., or approved equal. Mondo Air-Zone Pads, to be air injected.

B. Flooring (Third & Better] continuous tongue & groove, end-matched MFMA Northern Hard Maple, graded marked and stamped by manufacturer. Sizes: 25/32" x 2 ¼", 1 ½".

2.3 MATERIAL

Community Center Addition and Renovations
Gulf Breeze, Florida

- A. Athletic wood flooring system as specified in subsection 2.2.
- B. 6 mils polyethylene vapour barrier.
- C. Plywood panels: 15/32" x 4' x 8' (12 mm x 10.2 cm x 20.3 cm) APA-rated sheathing grade plywood, exposure 1.
- D. Mondo Air Zone, 1 3/16" (30 mm) thick, conical pads selected as per the intended purpose.
- E. Flooring fasteners to be 2" (51 mm) barbed cleat or 15 gauge coated staples.
- F. Provide Finishing material to be specified by Architect and applied according to manufacturer's specifications.

PART 3: EXECUTION

3.1 EXAMINATION AND PREPARATION

- A. The following must be ensured prior to installation of the primary product:
 - 1. Concrete subfloor to be placed a minimum of thirty (30) days prior to the installation of floor system.
 - 2. Inspect slab for proper tolerance, and perform the poly-film test for dryness.
 - 3. Water vapor membrane complies with specification in ASTM E 1745-97.
 - 4. Alkalinity test and moisture test must be preformed. PH level should be in the range of 7 to 8.5. Moisture content must not exceed 7 lbs/1000 ft² per 24 hrs (verify using the calcium chloride test as per ASTM F 1869-98).
 - 5. Smooth, dense finish, highly compacted with a tolerance of 1/8" in a 10 ft radius (3.2 mm in 3.05 m radius).
 - 6. Concrete slab depression is 2 7/8" (7.3 cm).
 - 7. Concrete subfloors on- or below-grade are installed over a suitable moisture retardant membrane.
- B. Subfloor must be clean, free of paint, thick dust, sealer, hardeners, grease, oil, solvents, old adhesive and any other foreign substances.
- C. Sealing of cracks, holes and, smoothing and leveling of rough, uneven surfaces, must be carried out using a good quality Portland cement based leveling compound (feathering compound), approved by the manufacturer.
- D. The beginning of installation stipulates the acceptance of surface and site conditions.
- E. Installation will not be carried out unless above conditions are satisfied.
- F. Report any discrepancies to the General Contractor for correction.

3.2 INSTALLATION

- A. Floor System
 - 1. Cover concrete with 6 mil polyethylene, sealing and lapping joints a minimum of 6" (152 mm).
 - 2. Attach 32-Mondo Air Zone Pads per sheet of plywood (4' x 8'), on first layer of sheathing at 12" (305 mm) o.c. in each direction.

Community Center Addition and Renovations
Gulf Breeze, Florida

3. Install first layer (with Air Zone Pads) of 15/32" sheathing grade plywood, with a 1/4" (6.4 mm) spacing between adjoining sheets and 1 1/2" to 2" (38 mm to 51 mm) expansion void along perimeter and all vertical obstructions.
4. Installation of the first layer of sheathing shall be across the short dimension of the room, while the second layer shall be laid at a 45° angle to the long dimension, so that the two layers cross at a 45° angle with each other.
5. Install perimeter rows of cushions with no more than 6" (152 mm) from edge of sheet to centre of cushion.
6. Use a minimum of 12" (305 mm) staples to fasten the second layer of sheathing to the first.

B. Install maple flooring, over sheathing, by power nailing, or stapling, approximately 12" (305 mm) o.c. with end joints properly driven up. Install flooring parallel to main playing court.

C. If required, size joints between flooring strips to allow for intermediate expansion in accordance with local humidity conditions.

D. Provide 1 1/2" to 2" (38 mm to 51 mm) expansion voids at perimeter and at all vertical obstructions.

E. Sanding: Machine drum sand with coarse, medium, and fine sand paper to achieve a smooth, even and uniform surface. Remove sanding dust from entire surface by vacuum and tack. Refer to MFMA sanding guide for procedures.

F. Finishing: Inspect entire area of the floor to insure that the surface is acceptable for finishing, and is clean and completely free from sanding dust. Apply two (2) coats of approved oil modified polyurethane seal and two (2) coats of approved oil modified polyurethane finish per manufacturer's instructions. Buff and clean floor between each coat.

G. Apply game lines accurately in accordance with drawings and layouts provided by Architect. Lines shall be straight with sharp edges. Apply between seal and first coat of finish. Refer to MFMA finishing guide for procedures. Allow for sufficient time (as specified by MFMA) prior to cleaning surface.

END OF SECTION 09644

SECTION 09681 - CARPET TILE

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes modular, carpet tile.

1.2 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Samples: For each color and texture required.
 - 1. Carpet Tile: Full-size Sample.
 - 2. Exposed Edge, Transition, and other Accessory Stripping: 12-inch- (300-mm-) long Samples.
- C. LEED Submittal:
 - 1. Product Data for Credit EQ 4.3:
 - a. For carpet tile, documentation indicating compliance with testing and product requirements of Carpet and Rug Institute's "Green Label Plus" program.
 - b. For installation adhesive, including printed statement of VOC content.
- D. Product Schedule: For carpet tile. Use same designations indicated on Drawings.
- E. Maintenance data.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Comply with CRI 104, Section 5, "Storage and Handling."

1.5 PROJECT CONDITIONS

- A. Comply with CRI 104, Section 7.2, "Site Conditions; Temperature and Humidity" and Section 7.12, "Ventilation."

- B. Environmental Limitations: Do not install carpet tiles until wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.
- D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.6 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer's standard form in which manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, and delamination.
 - 1. Warranty Period: **10** years from date of Substantial Completion.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Carpet Tile: Full-size units equal to **5** percent of amount installed for each type indicated, but not less than **10 sq. yd. (8.3 sq. m)**.

PART 2 - PRODUCTS

2.1 CARPET TILE

- A. ALLOWANCE: Allow \$35/square yard for material, installation and accessories

2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.
 - 1. VOC Limits: Provide adhesives with VOC content not more than 50 g/L when calculated according to 40 CFR 59, Subpart D (EPA method 24).

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with CRI 104, Section 14, "Carpet Modules," and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: **As recommended in writing by carpet tile manufacturer.**
- C. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- D. Install pattern parallel to walls and borders.

END OF SECTION 09681

SECTION 09912 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes surface preparation and the application of paint systems on the following interior substrates:
 - 1. Concrete masonry units (CMU).
 - 2. Steel.
 - 3. Galvanized metal.
 - 4. Wood.
 - 5. Gypsum board.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For each finish and for each color and texture required.
- C. Product List: Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.
- D. LEED Submittal:
 - 1. Product Data for Credit EQ 4.2: For paints, including printed statement of VOC content **and chemical components**.

1.3 QUALITY ASSURANCE

- A. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Wall and Ceiling Surfaces: Provide samples of at least **100 sq. ft. (9 sq. m)**.
 - b. Other Items: Architect will designate items or areas required.
 - 2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
 - 3. Final approval of color selections will be based on benchmark samples.
 - a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.4 EXTRA MATERIALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

PART 2 - PRODUCTS

2.1 PAINT, GENERAL

- A. Material Compatibility:
1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:
1. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
 2. Nonflat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
 3. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
 4. Floor Coatings: VOC not more than 100 g/L.
 5. Shellacs, Clear: VOC not more than 730 g/L.
 6. Shellacs, Pigmented: VOC not more than 550 g/L.
 7. Dry-Fog Coatings: VOC content of not more than 400 g/L.
 8. Zinc-Rich Industrial Maintenance Primers: VOC content of not more than 340 g/L.
 9. Pre-Treatment Wash Primers: VOC content of not more than 420 g/L.
- C. Chemical Components of Field-Applied Interior Paints and Coatings: Provide topcoat paints and anti-corrosive and anti-rust paints applied to ferrous metals that comply with the following chemical restrictions; these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:
1. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 2. Restricted Components: Paints and coatings shall not contain any of the following:
 - a. Acrolein.
 - b. Acrylonitrile.
 - c. Antimony.
 - d. Benzene.
 - e. Butyl benzyl phthalate.

- f. Cadmium.
- g. Di (2-ethylhexyl) phthalate.
- h. Di-n-butyl phthalate.
- i. Di-n-octyl phthalate.
- j. 1,2-dichlorobenzene.
- k. Diethyl phthalate.
- l. Dimethyl phthalate.
- m. Ethylbenzene.
- n. Formaldehyde.
- o. Hexavalent chromium.
- p. Isophorone.
- q. Lead.
- r. Mercury.
- s. Methyl ethyl ketone.
- t. Methyl isobutyl ketone.
- u. Methylene chloride.
- v. Naphthalene.
- w. Toluene (methylbenzene).
- x. 1,1,1-trichloroethane.
- y. Vinyl chloride.

D. Colors: **As selected by Architect from manufacturer's full range.**

2.2 BLOCK FILLERS

A. Interior/Exterior Latex Block Filler: MPI #4.

- 1. VOC Content: E Range of **E2**.

2.3 PRIMERS/SEALERS

A. Interior Latex Primer/Sealer: MPI #50.

- 1. VOC Content: E Range of **E2**.
- 2. Environmental Performance Rating: **EPR 1**.

B. Wood-Knot Sealer: Sealer recommended in writing by topcoat manufacturer for use in paint systems indicated.

2.4 METAL PRIMERS

A. Alkyd Anticorrosive Metal Primer: MPI #79.

- 1. VOC Content: E Range of **E2**.

B. Quick-Drying Alkyd Metal Primer: MPI #76.

- 1. VOC Content: E Range of **E2**.

C. Rust-Inhibitive Primer (Water Based): MPI #107.

1. VOC Content: E Range of **E2**.
2. Environmental Performance Rating: **EPR 1**.

D. Waterborne Galvanized-Metal Primer: MPI #134.

1. VOC Content: E Range of **E2**.
2. Environmental Performance Rating: **EPR 1**.

2.5 WOOD PRIMERS

A. Interior Latex-Based Wood Primer: MPI #39.

1. VOC Content: E Range of **E2**.
2. Environmental Performance Rating: **EPR 1**.

2.6 LATEX PAINTS

A. Institutional Low-Odor/VOC Latex (Flat): MPI #143 (Gloss Level 1).

1. VOC Content: E Range of E3.
2. Environmental Performance Rating: **EPR 4**.

B. Institutional Low-Odor/VOC Latex (Low Sheen): MPI #144 (Gloss Level 2).

1. VOC Content: E Range of E3.
2. Environmental Performance Rating: EPR 4.5.

C. Institutional Low-Odor/VOC Latex (Eggshell): MPI #145 (Gloss Level 3).

1. VOC Content: E Range of E3.
2. Environmental Performance Rating: EPR 4.5.

D. Institutional Low-Odor/VOC Latex (Semigloss): MPI #147 (Gloss Level 5).

1. VOC Content: E Range of E3.
2. Environmental Performance Rating: **EPR 3**.

E. Exterior Latex (Semigloss): MPI #11 (Gloss Level 5).

1. VOC Content: E Range of **E2**.

2.7 QUICK-DRYING ENAMELS

A. Quick-Drying Enamel (Semigloss): MPI #81 (Gloss Level 5).

1. VOC Content: E Range of **E3**.

B. Quick-Drying Enamel (High Gloss): MPI #96 (Gloss Level 7).

1. VOC Content: E Range of E3.

2.8 TEXTURED COATING

- A. Latex Stucco and Masonry Textured Coating: MPI #42.
 - 1. VOC Content: E Range of **E2**.

2.9 FLOOR COATINGS

- A. Interior/Exterior Clear Concrete Floor Sealer (Water Based): MPI #99.
 - 1. VOC Content: E Range of **E3**.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Masonry (Clay and CMU): 12 percent.
 - 3. Wood: 15 percent.
 - 4. Gypsum Board: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION AND APPLICATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- D. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:
 - 1. Mechanical Work:
 - a. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
- E. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- F. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.3 INTERIOR PAINTING SCHEDULE

- A. Concrete Substrates, Nontraffic Surfaces:
 - 1. Latex System: MPI INT 3.1E.
 - a. Prime Coat: Interior latex matching topcoat.
 - b. Topcoat: Interior latex (**eggshell**).
- B. Concrete Substrates, Traffic Surfaces:
 - 1. Water-Based Clear Sealer System: MPI INT 3.2G.
 - a. First Coat: Interior/exterior clear concrete floor sealer (water based).
 - b. Topcoat: Interior/exterior clear concrete floor sealer (water based).
- C. Clay-Masonry Substrates:
 - 1. Latex System: MPI INT 4.1A.
 - a. Prime Coat: Interior latex matching topcoat.
 - b. Topcoat: Interior latex (**eggshell**).
 - 2. Institutional Low-Odor/VOC Latex System: MPI INT 4.1M.
 - a. Prime Coat: Institutional low-odor/VOC interior latex matching topcoat.
 - b. Topcoat: Institutional low-odor/VOC interior latex (**eggshell**).
- D. CMU Substrates:
 - 1. Latex System: MPI INT 4.2A.
 - a. Prime Coat: Interior/exterior latex block filler.
 - b. Topcoat: Interior latex (**eggshell**).

2. Institutional Low-Odor/VOC Latex System: MPI INT 4.2E.

- a. Prime Coat: Interior/exterior latex block filler.
- b. Topcoat: Institutional low-odor/VOC interior latex (**eggshell**).

E. Steel Substrates:

1. Institutional Low-Odor/VOC Latex System: MPI INT 5.1S.

- a. Prime Coat: Rust-inhibitive primer (water based).
- b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
- c. Topcoat: Institutional low-odor/VOC interior latex (**semigloss**).

F. Gypsum Board Substrates:

1. Institutional Low-Odor/VOC Latex System: MPI INT 9.2M.

- a. Prime Coat: Interior latex primer/sealer.
- b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
- c. Topcoat: Institutional low-odor/VOC interior latex (**eggshell**).

END OF SECTION 09912

SECTION 09960 - HIGH-PERFORMANCE COATINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Epoxy coating systems applied to concrete and masonry surfaces.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

- A. ASTM International (ASTM):
 - 1. D4258 - Standard Practice for Surface Cleaning Concrete for Coating.
 - 2. D4259 - Standard Practice for Abrading Concrete.
 - 3. D4260 - Standard Practice for Liquid and Gelled Acid Etching of Concrete.
 - 4. D4261 - Standard Practice for Surface Cleaning Concrete Unit Masonry for Coating.
- B. Society for Protective Coatings (SSPC) - Painting Manual.

1.3 SUBMITTALS

- A. Submittals for Review:
 - 1. Product Data: Manufacturer's data on materials proposed for use. Include product analysis, performance characteristics, and surface preparation materials and procedures.
 - 2. Samples:
 - a. 3 x 3 inch coating samples showing available colors.
 - b. After color selection, submit 12 x 12 inch coating system samples on representative substrate.
- B. Sustainable Design Submittals:
 - 1. Regional Materials.
 - 2. Low-Emitting Materials.

1.4 QUALITY ASSURANCE

- A. Applicator Qualifications: Minimum 5 years experience in work of this Section.

1.5 PROJECT CONDITIONS

- A. Apply coatings under dry and dust free conditions.
- B. Ambient Temperature: Between 60 and 90 degrees F.
- C. Humidity: Less than 50 percent.

- D. Provide lighting level of 80 footcandles measured mid-height at substrate surface.

1.6 MAINTENANCE

- A. Extra Materials: 1 gallon of each coating.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Carboline Co. (www.carboline.com)
 - 2. Tnemec Co., Inc. (www.tnemec.com)
 - 3. Dex-O-Tex
- B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Coatings: As scheduled at end of Section, or approved substitute.
- B. Maximum Volatile Organic Compound (VOC) Content: 150 grams per liter.

2.3 ACCESSORIES

- A. Thinners and Cleaners: Types recommended by manufacturer.

2.4 MIXES

- A. Mix materials in accordance with manufacturer's instructions.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Measure moisture content of masonry and concrete surfaces using electronic moisture meter. Do not apply coatings unless moisture content of surfaces are below following maximums:
 - 1. Masonry: 12 percent.
 - 2. Concrete: 12 percent.

3.2 PREPARATION

- A. Clean substrate; remove loose and foreign matter that could impede adhesion or performance of coating.

3.3 APPLICATION

- A. Apply coatings in accordance with manufacturer's instructions.
- B. Apply primer immediately after surface preparation to prevent contamination of surface.

- C. Apply coatings uniformly without visible laps, sags, curtains, holidays, and objectionable brush marks.
- D. Allow each coat to cure completely before applying additional coats.
- E. Ensure that each coat is undamaged prior to applying succeeding coat.

3.4 ADJUSTING

- A. Touch up minor damage or refinish as required.

3.5 CLEANING

- A. Remove coatings from adjacent surfaces.

END OF SECTION

SECTION 10211

PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Solid plastic toilet partitions.
 - 2. Solid plastic urinal screens.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section 10 - Toilet Accessories.

1.2 SUBMITTALS

- A. Submittals for Review:
 - 1. Shop Drawings: Include layout, dimensions, materials, panel construction, finishes, hardware, and accessories.
 - 2. Samples: 3 x 3 inch panel samples in each color.
- B. Sustainable Design Submittals:
 - 1. Recycled Content.
 - 2. Regional Materials.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Accurate Partitions Corp. (www.accuratepartitions.com)
 - 2. Ampco Products, Inc. (www.ampco.com)
 - 3. Comtec Industries/Capital Partitions. (www.comtecindustries.com)
 - 4. Global Steel Products Corp. (www.globalpartitions.com)
 - 5. Santana Products. (www.hinyhider.com)
- B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Polymer Sheet:
 - 1. Solid HDPE, integrally colored.
 - 2. Recycled content: Minimum 75 percent, classified as post consumer.
- B. Head Rail:
 - 1. Hollow, extruded aluminum, with anti-grip surface and cast wall sockets.
 - 2. Recycled content: Minimum 75 percent, with minimum 40 percent classified as post consumer.

- C. Hardware: Plated steel, stainless steel, or aluminum.
 - 1. Hinges: Gravity rising or non rising spring tension actuated; conceal operable parts in door.
 - 2. Latches: Sliding type requiring maximum 5 pound force to operate, with emergency release operation.
 - 3. Coat hook and door stop: Combination type with rubber tip.
 - 4. Door strike and keeper with rubber bumper.

2.3 ACCESSORIES

- A. Fasteners: Stainless steel, theft resistant where exposed.

2.4 FABRICATION

- A. Configurations:
 - 1. Toilet partitions: Floor mounted, headrail braced.
 - 2. Urinal screens: Wall hung, continuously supported.
- B. Construction:
 - 1. Solid polymer sheet with edges machined to approximately 15 degree radius.
 - 2. Panels: Minimum 3/4 inch thick.
 - 3. Doors and pilasters: Minimum 3/4 inch thick.
- C. Provide cutouts for toilet room accessories. Mark locations for partition mounted accessories.
- D. Pilaster Shoes: Formed stainless steel.

2.5 FINISHES

- A. Panels, Doors, and Pilasters: color to be selected from manufacturer's full color range.
- B. Hardware and Accessories:
 - 1. Stainless steel: No. 4 satin.
 - 2. Aluminum: Clear anodized.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Set partitions straight, plumb, level, and aligned.
- C. Provide 3/8 to 1/2 inch vertical clearances between walls and panels and between walls and end pilasters.
- D. Attach panel and head rail brackets to walls using appropriate anchor devices.
- E. Adjust for floor variations with screw jack integral in pilasters. Conceal floor fastenings with pilaster shoes.

- F. Support pilasters from built-in framing using adjustable hanging studs providing vertical leveling. Conceal ceiling fastenings with pilaster shoes.
- G. Equip doors with two hinges, door latch, door strike and keeper, and bumper/coat hook. Provide one additional bumper/hook on inside of outswinging doors.

3.2 ADJUSTING

- A. Adjust hardware for proper operation.
- B. Adjust door hinges to hold door open 10 degrees when not latched.
- C. Sand out and polish minor scratches and abrasions to match factory finish.

END OF SECTION

SECTION 10265 - IMPACT-RESISTANT WALL PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Corner guards.
 - 2. Impact-resistant wall coverings.
- B. See Division 8 Section "Door Hardware" for metal armor, kick, mop, and push plates.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include sections, details, and attachments to other work.
- C. Samples: For each type of unit and for each color and texture required.
- D. LEED Submittal:
 - 1. Product Data for Credit EQ 4.1: For adhesives, including printed statement of VOC content.
- E. Maintenance data.

1.3 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Provide impact-resistant, plastic wall-protection units with surface-burning characteristics as determined by testing identical products per ASTM E 84, NFPA 255, or UL 723 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store plastic wall-protection components for a minimum of 72 hours, or until plastic material attains a minimum room temperature of 70 deg F (21 deg C).

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of impact-resistant wall-protection units that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: **Five** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 MATERIALS

- A. Extruded Rigid Plastic: High-impact-resistant PVC or acrylic-modified vinyl plastic with integral color throughout.
- B. Plastic Sheet Wall Covering Material: Semirigid, high-impact-resistant PVC or acrylic-modified vinyl plastic sheet with integral color throughout.
- C. Aluminum Extrusions: **ASTM B 221** (ASTM B 221M).
- D. Stainless-Steel Sheet: ASTM A 240/A 240M.
- E. Fasteners: Aluminum, nonmagnetic stainless steel, or other noncorrosive metal; security-type where exposed to view.
- F. Adhesive: Type recommended by manufacturer for use with material being adhered to substrate indicated.
 - 1. Use adhesives and sealants that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Gypsum Board and Panel Adhesives: 50 g/L.
 - b. Multipurpose Construction Adhesives: 70 g/L.
 - c. Contact Adhesive: 80 g/L.

2.3 CORNER GUARDS

- A. Surface-Mounted, Resilient, Plastic Corner Guards : Assembly consisting of snap-on plastic cover installed over continuous retainer; including mounting hardware; fabricated with 90- or 135-degree turn to match wall condition.
 - 1. **Available** Manufacturers:
 - a. American Floor Products Co., Inc.
 - b. ARDEN Architectural Specialties, Inc.
 - c. Balco, Inc.
 - d. Construction Specialties, Inc.
 - e. IPC Door and Wall Protection Systems; Division of InPro Corporation.
 - f. Korogard Wall Protection Systems; Division of RJF International Corporation.
 - g. Pawling Corporation.
 - h. Tepromark International, Inc.

2. Cover: Extruded rigid plastic, minimum **0.078-inch (2.0-mm)** wall thickness; **as follows:**
 - a. Profile: Nominal **2-inch- (50-mm-)** long leg and **1/4-inch (6-mm)** corner radius.
 - b. Height: **4 feet (1.2 m)**.
 - c. Color and Texture: **As selected by Architect from manufacturer's full range.**
3. Retainer: Minimum **0.060-inch- (1.5-mm-)** thick, 1-piece, extruded aluminum.
4. Top and Bottom Caps: Prefabricated, injection-molded plastic; color matching cover; field adjustable for close alignment with snap-on cover.

2.4 IMPACT-RESISTANT WALL COVERINGS

- A. Semirigid, Impact-Resistant Sheet Wall Covering : Fabricated from plastic sheet wall covering material.
 1. Manufacturers:
 - a. American Floor Products Co., Inc.
 - b. ARDEN Architectural Specialties, Inc.
 - c. Balco, Inc.
 - d. Construction Specialties, Inc.
 - e. IPC Door and Wall Protection Systems; Division of InPro Corporation.
 - f. Korogard Wall Protection Systems; Division of RJF International Corporation.
 - g. Pawling Corporation.
 2. Size: **48 by 120 inches (1219 by 3048 mm)** for roll.
 3. Sheet Thickness: **0.040 inch (1.0 mm)**.
 4. Color and Texture: **As selected by Architect from manufacturer's full range.**
 5. Trim and Joint Moldings: Extruded rigid plastic that matches sheet wall covering color.
 6. Mounting: Adhesive.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Complete finishing operations, including painting, before installing impact-resistant wall-protection system components.
- B. Install impact-resistant wall-protection units level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.
 1. Provide splices, mounting hardware, anchors, and other accessories required for a complete installation.
- C. Immediately after completion of installation, clean plastic covers and accessories using a standard, ammonia-based, household cleaning agent.
- D. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

END OF SECTION 10265

SECTION 10350 - FLAGPOLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes **ground-mounted** aluminum flagpoles.

1.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Flagpole assemblies, including anchorages and supports, shall withstand the effects of gravity loads, and the following loads and stresses within limits and under conditions indicated according to the following design criteria:
 - 1. Wind Loads: 140 mph, exposure "B" according to **NAAMM FP 1001, "Guide Specifications for Design of Metal Flagpoles."**
 - 2. Base flagpole design on polyester flags of maximum standard size suitable for use with flagpole.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Delegated-Design Submittal: For flagpole assemblies indicated to comply with performance requirements and design criteria, including analysis data and calculations signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Operation and Maintenance Data: For flagpoles to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, **provide products by one of the following:**
 - 1. American Flagpole; a Kearney-National Inc. company.
 - 2. Concord Industries, Inc.
 - 3. Eder Flag Manufacturing Company, Inc.
 - 4. Ewing Flagpoles.
 - 5. Lingo Inc.; Acme Flagpole Company Division.
 - 6. Pole-Tech Company Inc.
 - 7. U.S. Flag & Flagpole Supply, LP.
 - 8. USS Manufacturing Inc.

2.2 FLAGPOLES

- A. Exposed Height: 30 **feet**.
- B. Aluminum Flagpoles: Provide **cone**-tapered flagpoles fabricated from seamless extruded tubing complying with ASTM B 241/B 241M, Alloy 6063, with a minimum wall thickness of **3/16 inch (4.8 mm)**.
- C. Metal Foundation Tube: Manufacturer's standard corrugated-steel foundation tube, not less than **0.064-inch- (1.6-mm-)** nominal wall thickness. Provide with **3/16-inch (4.8-mm)** steel bottom plate and support plate; **3/4-inch- (19-mm-)** diameter, steel ground spike; and steel centering wedges welded together. Galvanize steel after assembly. Provide loose hardwood wedges at top of foundation tube for plumbing pole. Provide flashing collar of same material and finish as flagpole.
- D. Finial Ball : Manufacturer's standard flush-seam ball, sized as indicated or, if not indicated, to match flagpole-butt diameter. Fabricate from **0.063-inch (1.6-mm)** spun aluminum, finished to match flagpole.
- E. Internal Halyard, Cam Cleat System: **5/16-inch- (8-mm-)** diameter, **braided polypropylene** halyard; cam cleat; and concealed revolving truck assembly with plastic-coated counterweight and sling. Provide flush access door secured with cylinder lock. Finish truck assembly to match flagpole.
- F. Halyard Flag Snaps: Provide two swivel snap hooks per halyard.

2.3 MISCELLANEOUS MATERIALS

- A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107.
- B. Sand: ASTM C 33, fine aggregate.
- C. Elastomeric Joint Sealant: Joint sealant complying with requirements in Division 7 Section "Joint Sealants."

2.4 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, **AA-M12C22A41, Class I, 0.018 mm** or thicker.

PART 3 - EXECUTION

3.1 FLAGPOLE INSTALLATION

- A. General: Install flagpoles where shown and according to **Shop Drawings and** manufacturer's written instructions.
- B. Ground Set: Place foundation tube, center, and brace to prevent displacement during concreting. Install flagpole, plumb, in foundation tube. Place tube seated on bottom plate between steel centering wedges and install hardwood wedges to secure flagpole in place. Place and compact sand in foundation tube and remove hardwood wedges. Seal top of

foundation tube with a 2-inch (50-mm) layer of elastomeric joint sealant and cover with flashing collar.

END OF SECTION 10350

SECTION 10520 - FIRE-PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes **portable fire extinguishers and fire-protection cabinets**.
- B. See Division 7 Section "Through-Penetration Firestop Systems" for firestopping sealants at fire-rated cabinets.
- C. Division 15 Section "Standpipe and Hose Systems" for fire hoses in cabinets.

1.2 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire-protection specialties.
 - 1. Fire Extinguishers: Include rating and classification.
 - 2. Cabinets: Include door hardware, cabinet type, trim style, panel style, and details of installation.

1.3 QUALITY ASSURANCE

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

1.4 COORDINATION

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 366/A 366M carbon steel, commercial quality, stretcher leveled, temper rolled.
- B. Aluminum: ASTM B 209 sheet and ASTM B 221 extrusions, alloy and temper recommended by aluminum producer and manufacturer for type of use and finish indicated.

2.2 PORTABLE FIRE EXTINGUISHERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Amerex Corporation.
 2. Ansul Incorporated.
 3. Badger; Div. of Figgie Fire Protection Systems.
 4. Buckeye Fire Equipment Company.
 5. Fire-End & Croker Corporation.
 6. General Fire Extinguisher Corporation.
 7. J. L. Industries, Inc.
 8. Kidde, Walter The Fire Extinguisher Co.
 9. Larsen's Manufacturing Company.
 10. Modern Metal Products; Div. of Technico.
 11. Moon/American, Inc.
 12. Pem All; Div. of Pem Systems, Inc.
 13. Potter-Roemer; Div. of Smith Industries, Inc.
 14. Samson Products, Inc.
 15. Watrous; Div. of American Specialties, Inc.
- B. General: Provide fire extinguishers for each cabinet and other locations indicated.
1. Mounting Brackets: Manufacturer's standard steel, designed to secure extinguisher indicated and with plated or baked-enamel finish.
 - a. Provide brackets for extinguishers **not located** in cabinets.
 2. Identification: Lettering to comply with authorities having jurisdiction for letter style, color, size, spacing, and location. Locate as directed by Architect.
 - a. Identify bracket-mounted extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to wall surface.
- C. Multipurpose Dry-Chemical Type: UL-rated **2-A:10:B:C, 5-lb** nominal capacity, in enameled-steel container.

2.3 FIRE-PROTECTION CABINETS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Filtrine Manufacturing Company.
 2. Fire-End & Croker Corporation.
 3. General Accessory Manufacturing Co.
 4. J. L. Industries, Inc.
 5. Larsen's Manufacturing Company.
 6. Modern Metal Products; Div. of Technico.
 7. Moon/American, Inc.
 8. Potter-Roemer; Div. of Smith Industries, Inc.
 9. Samson Products, Inc.
 10. Thomas Enterprises.
 11. Watrous; Div. of American Specialties, Inc.
- B. Fire Protection Cabinet:

1. Cabinet Construction: Provide manufacturer's standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Weld joints and grind smooth. Miter and weld perimeter door frames.
 - a. Fire-Rated Cabinets: Listed and labeled to meet requirements in ASTM E 814 for fire-resistance rating of wall where it is installed.
 - 1) Construct fire-rated cabinets with double walls fabricated from 0.0478-inch-thick, cold-rolled steel sheet lined with minimum 5/8-inch-thick, fire-barrier material.
 - b. Cabinet Metal: **Enameled-steel** sheet.
2. Cabinet Type: Suitable for **fire extinguisher**.
3. Cabinet Mounting: **Semirecessed**.
4. Cabinet Trim Style: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.
 - a. Exposed Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).
 - 1) Rolled-Edge Trim for Semirecessed Cabinets: **2-1/2-inch** backbend depth.
5. Cabinet Trim Material: Manufacturer's standard **aluminum**.
6. Door Material: Manufacturer's standard **aluminum sheet**.
7. Door Glazing: Manufacturer's standard, as follows:
 - a. Acrylic: Smooth or textured sheet, **1.5-mm** thickness; **white** color.
8. Door Style: Manufacturer's standard **fully glazed panel with frame**.
9. Door Construction: Fabricate doors according to manufacturer's standards, of materials indicated, and coordinated with cabinet types and trim styles selected.
 - a. Provide minimum 1/2-inch-thick door frames, fabricated with tubular stiles and rails, and hollow-metal design.
10. Door Hardware: Provide manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide either lever handle with cam-action latch, or exposed or concealed door pull and friction latch. Provide concealed or continuous-type hinge permitting door to open 180 deg rees.
 - a. Door Locks: Provide cylinder lock, with all cabinets keyed alike.
11. Identification: Provide lettering to comply with authorities having jurisdiction for letter style, color, size, spacing, and location. Locate as directed by Architect.
 - a. Identify fire extinguisher in cabinet with the words "FIRE EXTINGUISHER" applied to door.
 - 1) Application Process: **Engraved**.
 - 2) Lettering Color: **Red**.
 - 3) Orientation: **Horizontal**.

2.4 FINISHES

- A. **Steel and Aluminum** Cabinet and Door Finishes: Provide manufacturer's standard baked-enamel paint for the following:

1. Exterior of cabinets, except for those surfaces indicated to receive another finish.
 2. Interior of cabinets.
- B. Aluminum Anodic Finish: Class **II, clear anodic coating complying with AAMA 607.**
- C. Surface Preparation: Clean surfaces of dirt, oil, grease, mill scale, rust, and other contaminants that could impair paint bond using manufacturer's standard methods.
- D. Steel Baked-Enamel Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-enamel finish consisting of prime coat and thermosetting topcoat. Minimum dry film thickness of 2 mils.
1. Color **and Gloss: As selected from manufacturer's standard.**

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Examine walls and partitions for suitable framing depth and blocking where recessed and semirecessed cabinets are to be installed.
- B. Examine fire extinguishers for proper charging and tagging. Remove and replace damaged, defective, or undercharged units.
- C. Install in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.
 1. Prepare recesses for cabinets as required by type and size of cabinet and trim style.
 2. Fasten cabinets to structure, square and plumb.
- D. Adjust cabinet doors that do not swing or operate freely.
- E. Refinish or replace cabinets and doors damaged during installation.

END OF SECTION 10520

SECTION 10801 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Public-use washroom accessories.
 - 2. Public-use shower room accessories.
 - 3. Warm-air dryers.
 - 4. Childcare accessories.
 - 5. Underlavatory guards.
 - 6. Custodial accessories.
- B. Owner-Furnished Material: Toilet Paper dispensers, paper towel dispensers, soap dispensers.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
 - 1. Identify locations using room designations indicated.
 - 2. Identify products using designations indicated.
- C. Maintenance data.
- D. Warranty: Sample of special warranty.

1.3 QUALITY ASSURANCE

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

1.4 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: **15** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PUBLIC-USE WASHROOM ACCESSORIES

- A. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1. A & J Washroom Accessories, Inc.
 - 2. American Specialties, Inc.
 - 3. Bobrick Washroom Equipment, Inc.
 - 4. Bradley Corporation.
 - 5. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
 - 6. Tubular Specialties Manufacturing, Inc.
- C. Grab Bar :
 - 1. Basis-of-Design Product: Bradley.
 - 2. Mounting: Flanges with **concealed** fasteners.
 - 3. Material: Stainless steel, **0.05 inch (1.3 mm)** thick.
 - a. Finish: Smooth, No. 4 finish (satin) **on ends and slip-resistant texture in grip area.**
 - 4. Outside Diameter: **1-1/2 inches (38 mm).**
 - 5. Configuration and Length: **As indicated on Drawings.**
- D. Sanitary-Napkin Disposal Unit
 - 1. Basis-of-Design Product: Bradley.
 - 2. Mounting: **Partition mounted, dual access.**
 - 3. Door or Cover: Self-closing, disposal-opening cover.
 - 4. Receptacle: Removable.
 - 5. Material and Finish: **Stainless steel, No. 4 finish (satin).**
- E. Mirror Unit :
 - 1. Basis-of-Design Product: Bradley.
 - 2. Frame: **Stainless-steel channel.**
 - a. Corners: **Manufacturer's standard.**
 - 3. Integral Shelf: **5 inches (127 mm)** deep.
 - 4. Hangers: Produce rigid, tamper- and theft-resistant installation, using method indicated below.
 - a. One-piece, galvanized-steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
 - b. Wall bracket of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.

5. Size: **As indicated on Drawings.**

2.2 PUBLIC-USE SHOWER ROOM ACCESSORIES

- A. Manufacturers: Subject to compliance with requirements, **available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:**
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
1. A & J Washroom Accessories, Inc.
 2. American Specialties, Inc.
 3. Bobrick Washroom Equipment, Inc.
 4. Bradley Corporation.
 5. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
 6. Tubular Specialties Manufacturing, Inc.
- C. Shower Curtain Rod .
1. Description: **1-inch (25.4-mm) OD; fabricated from nominal 0.0375-inch- (0.95-mm-) thick stainless steel.**
 2. Mounting Flanges: **Stainless-steel flanges designed for exposed fasteners.**
 3. Finish: **No. 4 (satin).**
- D. Shower Curtain :
1. Size: Minimum **12 inches (305 mm)]** wider than opening by **72 inches (1828 mm)** high.
 2. Material: **Vinyl, minimum 0.006 inch (0.15 mm) thick, opaque, matte**
 3. Color: **White.**
 4. Grommets: Corrosion resistant at minimum **6 inches (152 mm)** o.c. through top hem.
 5. Shower Curtain Hooks: Chrome-plated or stainless-steel, spring wire curtain hooks with snap fasteners, sized to accommodate specified curtain rod. Provide one hook per curtain grommet.
- E. Folding Shower Seat :
1. Configuration: **L-shaped seat, designed for wheelchair access.**
 2. Seat: **Phenolic or polymeric composite of slat-type or one-piece construction in color as selected by Architect.**
 3. Mounting Mechanism: **Stainless steel, No. 4 finish (satin).**
 4. Dimensions: See drawings.

2.3 WARM-AIR DRYERS

- A. Manufacturers: Subject to compliance with requirements, **provide products by one of the following:**
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
1. A & J Washroom Accessories, Inc.
 2. American Dryer, Inc.
 3. American Specialties, Inc.
 4. Bobrick Washroom Equipment, Inc.
 5. Bradley Corporation.

6. Excel Dryer Corporation.
7. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
8. Tubular Specialties Manufacturing, Inc.
9. World Dryer Corporation.

C. Warm-Air Dryer

1. Basis-of-Design Product: EXCEL.
2. Mounting: **Surface mounted.**
3. Operation: **Electronic-sensor** activated with timed power cut-off switch.
 - a. Operation Time: **30 to 40** seconds.
4. Cover Material and Finish: **Stainless steel, No. 4 finish (satin).**
5. Electrical Requirements: **115 V, 13 A, 1500 W.**

2.4 CHILDCARE ACCESSORIES

- A. Manufacturers: Subject to compliance with requirements, **provide products by one of the following**
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 1. American Specialties, Inc.
 2. Brocar Products, Inc.
 3. Diaper Deck & Company, Inc.
 4. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
 5. Koala Kare Products; a division of Bobrick Washroom Equipment, Inc.
 6. SSC, Inc.
 7. Tubular Specialties Manufacturing, Inc.
- C. Diaper-Changing Station :
 1. Description: **Horizontal** unit that opens by folding down from stored position and with child-protection strap.
 - a. Engineered to support a minimum of **[250-lb (113-kg)]** <Insert value> static load when opened.
 2. Mounting: **Surface mounted, with unit projecting not more than 4 inches (100 mm) from wall when closed.**
 3. Operation: By pneumatic shock-absorbing mechanism.
 4. Material and Finish: **HDPE in manufacturer's standard color.**
 5. Liner Dispenser: Built in.

2.5 UNDERLAVATORY GUARDS

- A. Manufacturers: Subject to compliance with requirements, **provide products by one of the following:**
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Plumberex Specialty Products, Inc.
2. Truebro by IPS Corporation.

C. Underlavatory Guard :

1. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping; allow service access without removing coverings.
2. Material and Finish: Antimicrobial, molded plastic, white.

2.6 CUSTODIAL ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, **provide products by one of the following:**

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. A & J Washroom Accessories, Inc.
2. American Specialties, Inc.
3. Bobrick Washroom Equipment, Inc.
4. Bradley Corporation.
5. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
6. Tubular Specialties Manufacturing, Inc.

C. Mop and Broom Holder :

1. Description: **Unit with shelf, hooks, holders, and rod suspended beneath shelf.**
2. Length: **36 inches.**
3. Hooks: **Three.**
4. Mop/Broom Holders: **Four**, spring-loaded, rubber hat, cam type.
5. Material and Finish: Stainless steel, No. 4 finish (satin).
 - a. Shelf: Not less than nominal **0.05-inch- (1.3-mm-)** thick stainless steel.
 - b. Rod: Approximately **1/4-inch- (6-mm-)** diameter stainless steel.

2.7 FABRICATION

A. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of **six** keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least **250 lbf (1112 N)**, when tested according to ASTM F 446.

END OF SECTION 10801

SECTION 11400 – FOOD SERVICE EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes equipment for foodservice facilities indicated on the Drawings.
- B. See Division 3 Section "Cast-in-Place Concrete" for the following:
 - 1. Requirements for slab depressions.
- C. See Division 5 Section "Metal Fabrications" for equipment supports.
- D. See Division 7 Section "Roof Accessories" for roof curbs and equipment supports.
- E. See Division 15 Sections for supply and exhaust fans; exhaust ductwork; service roughing-ins; drain traps; atmospheric vents; valves, pipes, and fittings; fire-extinguishing systems; and other materials required to complete foodservice equipment installation.
- F. See Division 15 Section "Commercial Kitchen Hoods" for ventilation hoods.
- G. See Division 16/17 Sections for connections to fire alarm systems, wiring, disconnect switches, and other electrical materials required to complete foodservice equipment installation.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For fabricated equipment. Include plans, elevations, sections, roughing-in dimensions, fabrication details, utility service requirements, and attachments to other work.
- C. Coordination Drawings: For foodservice facilities.
 - 1. Indicate locations of foodservice equipment and connections to utilities.
 - 2. Key equipment using same designations as indicated on Drawings.
 - 3. Include plans and elevations; clearance requirements for equipment access and maintenance; details of support for equipment; and utility service characteristics.
- D. Operation and maintenance data.
- E. Product Schedule: For each foodservice equipment item, include the following:
 - 1. Designation indicated on Drawings.

2. Manufacturer's name and model number.
3. List of factory-authorized service agencies including their addresses and telephone numbers.

1.3 QUALITY ASSURANCE

- A. NSF Standards: Provide equipment that bears NSF Certification Mark or UL Classification Mark certifying compliance with applicable NSF/ANSI standards.
- B. UL Certification: Provide electric and fuel-burning equipment and components that are evaluated by UL for fire, electric shock, and casualty hazards according to applicable safety standards and that are UL certified for compliance and labeled for intended use.
- C. Regulatory Requirements: Install equipment to comply with the following:
 1. ASHRAE 15, "Safety Code for Mechanical Refrigeration."
 2. NFPA 54, "National Fuel Gas Code."
 3. NFPA 70, "National Electrical Code."
 4. NFPA 96, "Ventilation Control and Fire Protection of Commercial Cooking Operations."
- D. Preinstallation Conference: Conduct conference at Project site.

1.4 PROJECT CONDITIONS

- A. Field Measurements: Indicate measurements on Coordination Drawings.
- B. Coordinate foodservice equipment layout and installation with other work, including lighting fixtures, HVAC equipment, fire-suppression system components, and utility service connections.

1.5 WARRANTY

- A. Refrigeration Compressor Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace compressors that fail in materials or workmanship within specified warranty period.
 1. Failure includes, but is not limited to, inability to maintain set temperature.
 2. Warranty Period: **Five** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. **Basis-of-Design Product:** The design for foodservice equipment item is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

2.2 FABRICATED EQUIPMENT

- A. **Materials:**
 - 1. **Stainless Steel:** ASTM A 666, with No. 4 finish (directional satin finish) on exposed surfaces.
 - 2. **Galvanized Steel:** ASTM A 653/A 653M, **G90 (Z275)** coating designation; commercial-quality, cold-rolled steel that is zinc coated by the hot-dip process and chemically treated.
- B. **Stainless-Steel Sink:** See cut sheets attached>

2.3 FOODSERVICE EQUIPMENT

- A. **Food Waste Disposer Unit:** See cut sheet
- B. **Range:** See cut sheet attached
- C. **Microwave Oven:** see cut sheet attached
- D. **Refrigerator and Freezer:** see attached cut sheet
- E. **Ice-Making Machine:** see attached cut sheet
- F. **Warewashing Machine:** see attached cut sheet
- G. **Modular Counter:** see cut sheet attached

2.4 MISCELLANEOUS MATERIALS

- A. **Installation Accessories, General:** NSF certified for end-use application indicated.

- B. Elastomeric Joint Sealant: ASTM C 920; Type S (single component), Grade NS (nonsag), Class 25, Use NT (nontraffic) related to exposure, and Use M, G, A, or O as applicable to joint substrates indicated.
 - 1. Public Health and Safety Requirements:
 - a. Sealant is certified for compliance with NSF standards for end-use application indicated.
 - b. Washed and cured sealant complies with the FDA's regulations for use in areas that come in contact with food.
 - 2. Cylindrical Sealant Backing: ASTM C 1330, Type C, closed-cell polyethylene, in diameter larger than joint width.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install foodservice equipment level and plumb, according to manufacturer's written instructions.
 - 1. Connect equipment to utilities.
- B. Complete equipment assembly where field assembly is required.
 - 1. Provide closed butt and contact joints that do not require a filler.
 - 2. Grind field welds on stainless-steel equipment smooth, and polish to match adjacent finish.
- C. Install equipment with access and maintenance clearances that comply with manufacturer's written installation instructions and requirements of authorities having jurisdiction.
- D. Install closure-trim strips and similar items requiring fasteners in a bed of sealant.
- E. Install joint sealant in joints between equipment and abutting surfaces with continuous joint backing, unless otherwise indicated. Produce airtight, watertight, vermin-proof, sanitary joints.

3.2 CLEANING AND PROTECTING

- A. After completing installation of equipment, repair damaged finishes.
- B. Clean and adjust equipment as required to produce ready-for-use condition.
- C. Protect equipment from damage during remainder of the construction period.

3.3 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain foodservice equipment. Refer to Division 1 Section "**Closeout Procedures.**"

END OF SECTION 11400



5/11/2011

Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

Project:

Gulf Breeze

Recreation Center

From:

**KESCO Kitchen
Equipment & Supply
Company
Chris Emerine
4148 Barrancas Ave.
Pensacola FL 32507-
3644
(850) 456-1633**



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 1 - RANGE, 36" RESTAURANT, GAS (1 REQ'D)

Vulcan Hart V36

Value Series Restaurant Range, 36", gas, (6) 28,000 BTU burners with lift-off burner heads, standard oven base, s/s front, sides, backriser & lift-off high shelf, fully mig welded chassis, 6" adjustable legs, 203,000 BTU, CSA, NSF (contact factory for price)

ACCESSORIES

Mfr	Qty	Model	Spec
Vulcan Hart	1		1 year limited parts & labor warranty, standard
Vulcan Hart	1		Natural gas, specify elevation if over 2,000 ft.
Vulcan Hart	1	CASTERS RR4	Casters (set of 4)
Dormont Manufacturing	1	1675KITS36	Safety System Moveable Gas Connector Kit, 3/4" inside dia., 36" long, covered with stainless steel braid, coated with blue antimicrobial PVC, 1 SnapFast™ QD, 1 SwivelMAX™, 1 full port valve, 1 elbow, coiled restraining cable with hardware, limited lifetime warranty

V U L C A N V A L U E S E R I E S



36" GAS RESTAURANT RANGE

6 OPEN BURNERS



Model V36-1

SPECIFICATIONS

36" wide gas restaurant range, Vulcan Model No. V36-1. Stainless steel front, sides, backriser, high shelf, oven handle and bullnose. High temperature burner T knobs with set screw. Nickel plated bullet feet. Porcelain door liner and oven bottom. Six 28,000 BTU/hr. cast top burners with lift-off burner heads. Individual pilot for each burner. 12" x 12" cast top grates with aeration bowls. Heavy duty top grates and burner heads. Compression spring door hinge system for durability. 35,000 BTU/hr. Standard oven measures 26 1/4" w x 22" d x 14 1/2" h. Thermostat adjusts from Low to 500 degrees F. One oven rack with four rack positions. 3/4" rear gas connection and gas pressure regulator. Total input: 203,000 BTH/hr.

Exterior Dimensions:

32"d x 36"w x 58"h on 6" adjustable legs

- ☐ **V36-1** Natural Gas / 1 Standard Oven
- ☐ **V36-2** Propane / 1 Standard Oven

STANDARD FEATURES

- Fully MIG welded frame
- Stainless steel front, backriser, lift-off high shelf
- 6" Stainless steel adjustable legs
- 28,000 BTU/hr open top burners with lift-off heads
- Individual pilot for each burner
- 12" x 12" cast top grates with aeration bowls
- Welded crumb tray
- 35,000 BTU/hr standard oven cavity measures 26 1/4"d x 22"w x 14 1/2"h
- Oven thermostat adjusts from Low to 500°F
- One oven rack and four rack positions
- 3/4" rear gas connection and gas pressure regulator
- One year limited parts and labor warranty

ACCESSORIES (Packaged & Sold Separately)

- ☐ Extra oven rack
- ☐ Extra rack guides (set of two)
- ☐ Reinforced backriser and high shelf for mounting salamander broiler
- ☐ Set of four casters (two locking)
- ☐ 11" high stainless steel flue riser in place of standard backriser and high shelf



Vulcan & Wolf Range

a division of ITW Food Equipment Group LLC

P.O. Box 696 ■ Louisville, KY 40201 ■ Toll-free: 1-800-814-2028 ■ Local: 502-778-2791 ■ Quote & Order Fax: 1-800-444-0602

F-37390 (07/08)

VULCAN VALUE SERIES



36" GAS RESTAURANT RANGE

6 OPEN BURNERS

INSTALLATION INSTRUCTIONS

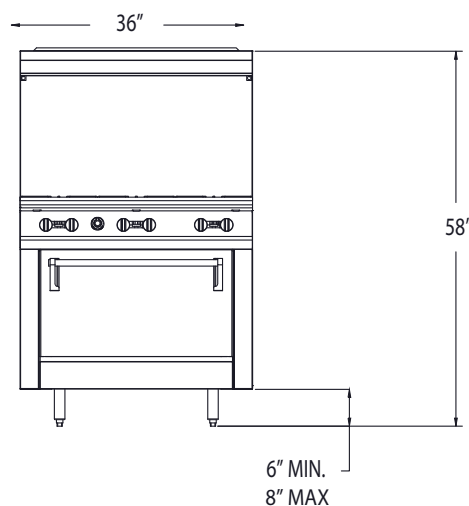
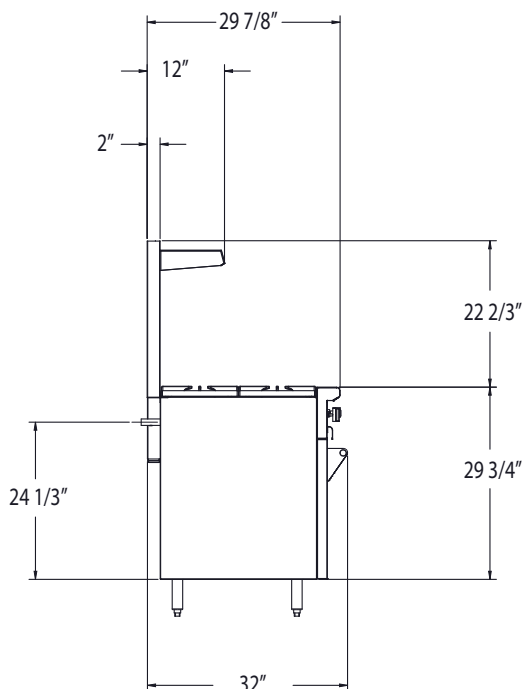
1. A pressure regulator sized for this unit is included. Natural gas 5.0" W.C., propane gas 10.0" W.C.
2. Gas line connecting to range must be 3/4" or larger. If flexible connectors are used, the inside diameter must be 3/4" or larger.
3. An adequate ventilation system is required for commercial cooking equipment. Information may be obtained by writing to the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269, www.NFPA.org. When writing, refer to NFPA No. 96.
4. These units are manufactured for installation in accordance with ANSZ223.1A (latest edition), National Fuel Gas Code. Copies may be obtained from The American Gas Association, 400 N Capitol St. NW, Washington, DC 20001, www.AGA.org.

5. Clearances

	<u>Rear</u>	<u>Sides</u>
Combustible	6"	10"
Standard Oven Non-combustible	0"	0"
Convection Oven Non-combustible	Min. 4"	0"
6. For proper combustion, install equipment on adjustable legs or casters provided with unit.
7. For proper combustion, install equipment on adjustable legs or casters provided with unit.

NOTE: In line with its policy to continually improve its product, Vulcan reserves the right to change materials and specifications without notice.

Specify type of gas when ordering. Specify altitude when above 2,000 feet.



TOP CONFIGURATION	MODEL NUMBER	DESCRIPTION	TOTAL INPUT BTU / HR	SHIPPING WEIGHT LBS / KG
	V36-1	6 Burners / 1 Standard Oven / Natural Gas	203,000	520 / 236
	V36-2	6 Burners / 1 Standard Oven / Propane	203,000	520 / 236

This appliance is manufactured for commercial use only and is not intended for home use.



Vulcan & Wolf Range

a division of ITW Food Equipment Group LLC

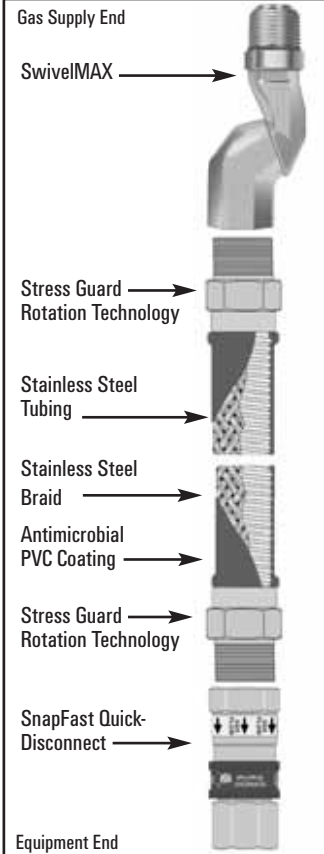
P.O. Box 696 ■ Louisville, KY 40201 ■ Toll-free: 1-800-814-2028 ■ Local: 502-778-2791 ■ Quote & Order Fax: 1-800-444-0602

Gas Connectors Specifier Sheet

Safety System™

Deluxe Installation Kits & Hose Assemblies with SnapFast™ QD & Single SwivelMAX™

Technical Drawing



Product Part Numbers - Order Using Part Numbers Listed Below

Configuration	Inside Dia.	LENGTH				
		24"	36"	48"	60"	72"
DELUXE KIT *		1650KITS24	1650KITS36	1650KITS48	1650KITS60	1650KITS72
BASIC KIT **	1/2"	1650BPQSR24	1650BPQSR36	1650BPQSR48	1650BPQSR60	1650BPQSR72
HOSE ASSEMBLY ♦		1650BPQS24	1650BPQS36	1650BPQS48	1650BPQS60	1650BPQS72
DELUXE KIT *		1675KITS24	1675KITS36	1675KITS48	1675KITS60	1675KITS72
BASIC KIT	3/4"	1675BPQSR24	1675BPQSR36	1675BPQSR48	1675BPQSR60	1675BPQSR72
HOSE ASSEMBLY ♦		1675BPQS24	1675BPQS36	1675BPQS48	1675BPQS60	1675BPQS72
DELUXE KIT *		16100KITS24	16100KITS36	16100KITS48	16100KITS60	16100KITS72
BASIC KIT **	1"	16100BPQSR24	16100BPQSR36	16100BPQSR48	16100BPQSR60	16100BPQSR72
HOSE ASSEMBLY ♦		16100BPQS24	16100BPQS36	16100BPQS48	16100BPQS60	16100BPQS72
DELUXE KIT *		16125KITS24	16125KITS36	16125KITS48	16125KITS60	16125KITS72
BASIC KIT **	1-1/4"	16125BPQSR24	16125BPQSR36	16125BPQSR48	16125BPQSR60	16125BPQSR72
HOSE ASSEMBLY ♦		16125BPQS24	16125BPQS36	16125BPQS48	16125BPQS60	16125BPQS72

BTU Flow Capacity (Flow rating BTU 0.64 SP. GR. @ 0.5 inch WC pressure drop)

Part #	Inside Dia.	LENGTH					
		12"	24"	36"	48"	60"	72"
1650BPQS	1/2"	92,000	81,000	72,000	63,000	56,000	51,000
1675BPQS	3/4"	242,000	216,000	203,000	167,000	147,000	130,000
16100BPQS	1"	396,000	385,000	353,000	310,000	274,000	260,000
16125BPQS	1-1/4"	556,000	533,000	491,000	482,000	463,000	460,000



Approvals & Certifications



NSF International Criteria C-2, Special Equipment and/or Devices

Component



UL 567, Pipe Connectors for Flammable and Combustible Liquids and LP-Gas



ANSI Z21.69 / CSA 6.16 - Connectors for Moveable Gas Appliances

ANSI Z21.41 / CSA 6.9 - Quick-Disconnect Devices For Use With Gas Fuel

Meets requirements of ANSI Z223.1 / NFPA 54 - National Fuel Gas Code

Refer to catalog page 23 for additional approvals & certifications and Dormont gas connector limited lifetime warranty

SwivelMAX and SnapFast are not for use in temperatures less than 32°F



Features & Specifications

THE DORMONT BLUE HOSE:

Tubing Annealed, 304 stainless steel (ASTM A240)
 Braiding Multi-strand, 304 stainless steel wire
 Coating Antimicrobial (patent #6,742,815) PVC, melts at 350°F, coating will not hold a flame; blue color indicates braided connector

End Fittings Carbon steel; zinc and yellow dichromate coating
 Stress Guard 360° rotation of end fittings at both ends (patent pending)

THE SNAPFAST ONE-HANDED QUICK-DISCONNECT - QD:

Quick-Disconnect Brass body, carbon steel threaded end fittings, and aluminum collar
 Thermal Shut-off Polymer insert in QD melts when internal temperatures exceed 350° F to shut off gas flow.

SWIVELMAX: Aluminum body, brass threaded end fittings

Movement 360° multi-plane spherical rotation

Patent # US patent 5,178,422 and 4,615,547; Canada patent 2,079,825

* DELUXE KITS INCLUDE:

Elbow Malleable iron - 1 included
 Restraining Cable PVC coated, carbon steel, multi-strand cable
 Valve 100% full port, brass gas ball valve

** BASIC KITS INCLUDE: The Dormont Blue Hose and restraining cable and hardware required for caster-mounted installations

♦ HOSE ASSEMBLIES

INCLUDE: Hose assembly and (1) elbow



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 2 - WORK TABLE, 12" - 18", STAINLESS STEEL TOP (1 REQ'D)

Advance Tabco TFMS-180

Equipment Filler Table, open base, s/s legs, 1-1/2" turn up in rear, 18" x 30", (filler table needs to be placed between 2 other tables for stability)



STAINLESS STEEL EQUIPMENT FILLER TABLE

FEATURES:

TOP is furnished with 1 5/8" sanitary rolled rim edge in front. Square edges on sides and 1/1/2" splash of single metal thickness on rear.

Hat channels stud welded to top which reinforces and maintains a level working surface.

Welded Front to Back Leg Assembly.

Rear (Left to Right) Stretcher bolts to side leg assemblies.

CONSTRUCTION:

All TIG welded. Exposed weld areas polished to match adjacent surfaces.

Entire top mechanically polished to a satin finish.

Top is sound deadened.

Roll formed embossed galvanized hat channels are secured to top by means of structural adhesive and weld studs.

Gussets welded to support hat sections.

MATERIAL:

TOP: 16 gauge stainless steel type "304" series.

STRETCHERS: 1 5/8" diameter tubular stainless steel.

LEGS: 1 5/8" diameter tubular stainless steel.

Stainless steel gussets.

1" stainless steel bullet feet.

Item #: _____ **Qty #:** _____

Model #: _____

Project #: _____



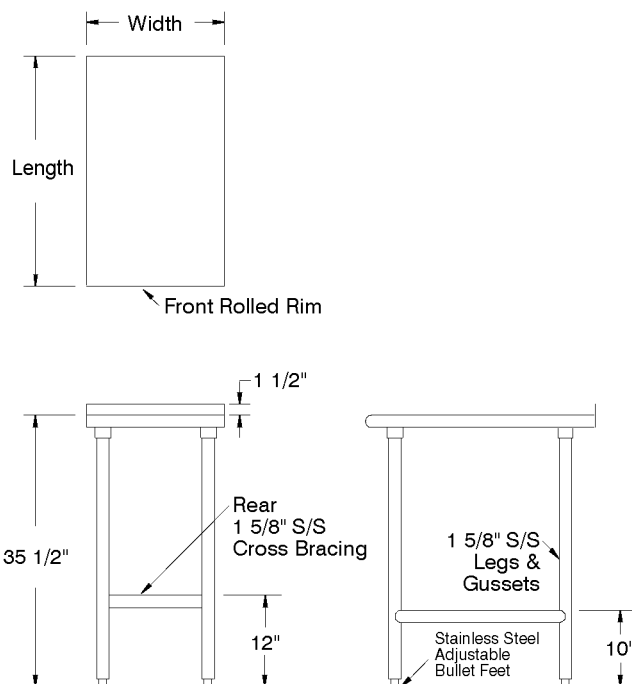
Model #	Width	Length	Wt.
TFMS-182	18"	24"	27 lbs.
TFMS-180	18"	30"	35 lbs.
TFMS-183	18"	36"	43 lbs.
TFMS-152	15"	24"	25 lbs.
TFMS-150	15"	30"	33 lbs.
TFMS-153	15"	36"	41 lbs.
TFMS-122	12"	24"	22 lbs.
TFMS-120	12"	30"	31 lbs.
TFMS-123	12"	36"	39 lbs.



DETAILS and SPECIFICATIONS

TOL ± .500"

ALL DIMENSIONS ARE TYPICAL



Customer Service Available To Assist You 1-800-645-3166 8:30 am - 8:00 pm E.S.T.

Email Orders To: customer@advancetabco.com. For Smart Fabrication™ Quotes, Email To: smartfab@advancetabco.com or Fax To: 631-586-2933

NEW YORK

Fax: (631) 242-6900

GEORGIA

Fax: (770) 775-5625

TEXAS

Fax: (972) 932-4795

NEVADA

Fax: (775) 972-1578

ADVANCE TABCO is constantly engaged in a program of improving our products. Therefore, we reserve the right to change specifications without prior notice. © ADVANCE TABCO, SEPT. 2005 **O-15**



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 3 - EXHAUST HOOD WITH FANS (1 REQ'D)

Greenheck Fan GHEW-ASP

8'-0" x 48" x 24" exhaust hood with stainless steel where exposed, full length perforated supply air plenum, aluminum baffle grease extractors, vapor proof incandescent light fixtures, fire control cabinet mounted on right side, KFCC fan control package, full length stainless steel wall flashing under hood, stainless steel perimeter ceiling enclosure panels, one (1) roof mounded exhaust fan, one (1) roof mounted supply air fan and fire control system factory installed.



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 4 - SINK, HAND (1 REQ'D)

Krowne Metal HS-2

Hand Sink, 17" x 15" OA, wall mount with bracket, 14" x 10" front-to-back x 6" deep compartment, splash mount gooseneck faucet, 1-1/2" drain, stainless steel construction



Hand Sinks

Model: _____

Item #: _____ Quantity: _____

Project: _____

NSF®

Model HS-9



Model HS-1



Model HS-2



Model HS-4



Model HS-5



Model HS-6



Model HS-7



Model HS-8



Model HS-10



- **Fabrication:**

One piece 304 series stainless steel. All seams tig welded and polished.

- **Bowl:**

Deep drawn with stamped rim on 17" models to prevent spillage.

- **Wall Mounting Bracket:**

Offset design for added strength.

- **Faucet:**

4" OC faucet supplied (wall or deck).

- **Drain:**

Stainless Steel.

- **Drain with Overflow:**

Stainless Steel with plastic overflow tube and inlet.

- **Plumbing:**

1/2" IPS hot and cold water.

1 1/2" IPS drain outlet.

Approved By: _____

Hand Sinks



**Metal
Corporation**

257 Verona Ave. Newark, New Jersey 07104

www.krowne.com

sales@krowne.com

Phone: 800-631-0442

FAX: 973-485-1424



Hand Sinks



Model: _____ Item #: _____ Quantity: _____ Project: _____

HS-9 12 lbs.	HS-1 12 lbs.	HS-2 14 lbs.
HS-4 14 lbs.	HS-5 15 lbs.	HS-6 11 lbs.
HS-7 30 lbs.	HS-8 35 lbs.	HS-10 19 lbs.

Options: check box(es) for required option(s)

- ☐ H-109 Faucet Upgrade
- ☐ H-100 1 1/2" IPS Chrome Plated P-Trap
- ☐ H-102 Wrist Handle Faucet
- ☐ H-103 Wrist Handle Kit

- ☐ H-104 Wall Mount Soap Dispenser
- ☐ H-105 Wall Mounted Towel Dispenser
- ☐ H-106 One Side Splash (specify side)
- ☐ H-107 Two Side Splashes
- ☐ H-108 Stainless Steel Skirt
- ☐ H-110 Side Support Brackets

Plumbing Requirements:

Install 36" Working Height
1/2" Faucet Supply 12" from Floor
1 1/2" Drain Line 23 1/4" from Floor

Approved By: _____

Due to our commitment to continued product improvement, specifications are subject to change without notice.

Krowne Metal
Corporation

257 Verona Ave. Newark, New Jersey 07104

www.krowne.com sales@krowne.com

Phone: 800-631-0442

FAX: 973-485-1424



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 5 - POPCORN POPPER (1 REQ'D)

Star Mfg. 39-A

JetStar™ Popcorn Popper, counter model, 6-oz popper kettle, (135) 1 oz. servings, magnetic latch, w/infrared heat lamp, approximately 19-1/2" x 14-1/4" footprint, clear tempered glass panels, stainless steel old maid drawer, yellow top

ACCESSORIES

Mfr	Qty	Model	Spec
Star Mfg.	1		2 Yr, parts & labor warranty, std.
Star Mfg.	1		120v/60/1-ph, 1197 watts, 10.0 amps, cord w/NEMA #5-15P, std.



JETSTAR POPCORN POPPERS & CART

Models 39-A, 39D-A, 39R-A, 39S-A & JPC-4/6

Features/Benefits:

- ★ Several style and color options available to fit any decor:
 - 39-A-**JetStar** Popper with Yellow Painted Top
 - 39D-A-**JetStar** Popper with Wood-Grain Styling
 - 39R-A-**JetStar** Popper with Antique Styling
 - 39S-A-**JetStar** Popper with Stainless Steel Top
- ★ Pops 135 one ounce servings per hour of quality Star Chief's Choice brand popcorn.(Contact factory for details)
- ★ Fits almost anywhere requiring only 21" of counter space.
- ★ 6 oz. nickel plated steel kettle for maintenance free operation.
- ★ Swing up/down kettle design allows easy dispensing of your popped corn into the cabinet and is easy to clean.
- ★ A magnetic catch holds the one-piece kettle lid up for easy and safe loading of Chief's Choice popcorn.
- ★ Heated stainless steel corn deck to keep your popcorn fresh and crisp when you want to snack.
- ★ Stainless steel removable old maid drawer for easy separation and removal of unpopped kernels.
- ★ Three 1/8" thick clear tempered glass panels with aluminum corner posts for easy cleaning and excellent merchandising.
- ★ Two clear Lexan doors have full length aluminum hinges with magnetic catch to stand up to consistent use.
- ★ Clear Lexan serving drop panel provides great visibility and easy removal for cleaning.
- ★ Eye level control panel houses 2 switches; top (kettle mixer and kettle heat) and bottom (75 watt light to merchandise and bottom element to keep popcorn crisp and ready to eat.)
- ★ Attractive colorful graphics to enhance impulse sales.
- ★ Optional cart available, convert your counter top popper into a floor model creating mobility and easy access to popcorn.



Model 39R-A



**Model 39R-A
on JPC-4/6**

Application:

The JetStar 6 oz. popcorn poppers are ideal for snack bars, convenience stores, taverns, restaurants or any place you want to pop delicious popcorn. Whether its a quick snack or an addition to a meal, JetStar commercial popcorn machines are built to last.

Quality Construction:

The 6 oz. JetStar family of popcorn poppers are outfitted with a nickel plated steel kettle, stainless steel exterior shell and a 1000 watt kettle heating element. Units are constructed of 1/8" thick tempered glass panels and four extruded aluminum corner posts. Units have two 3/16" thick Lexon doors with full length aluminum hinges and clear Lexan removable drop panel. Contains a 50 watt heated stainless steel corn deck and a stainless steel old maid drawer. A 6' cord and NEMA 5-15 Plug are standard.

Warranty:

JetStar 6oz poppers are covered by Star's two year parts and labor warranty.



Star Manufacturing International Inc. - 10 Sunnen Drive - P.O. Box 430129 - St. Louis, MO 63143-3800

Phone: (800) 264-7827 - FAX: (800) 264-6666 - www.star-mfg.com

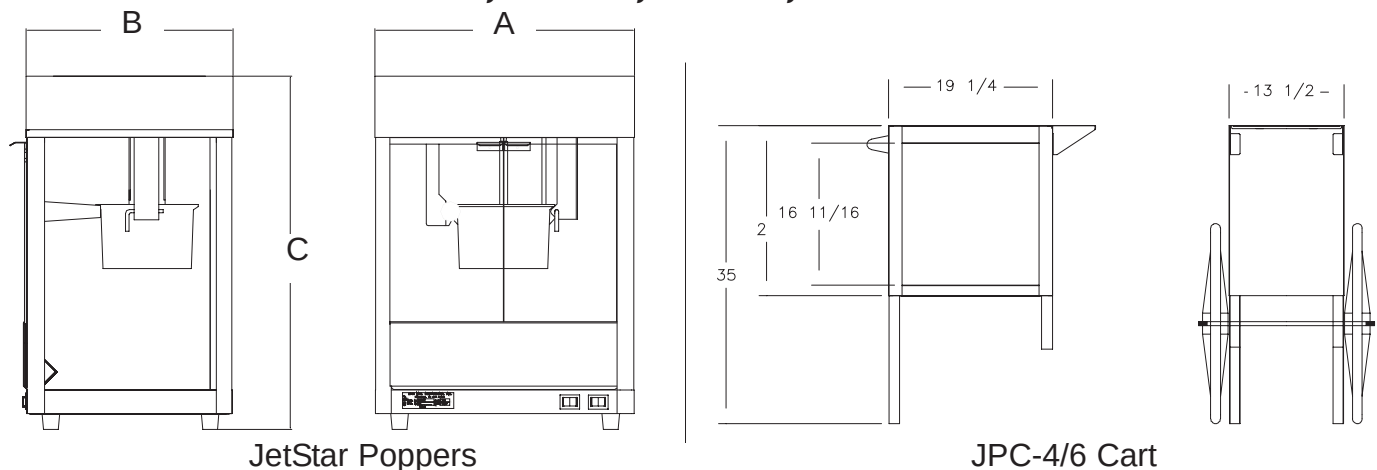
S165/0074



Star Manufacturing International, Inc

JETSTAR POPCORN POPPERS & CART

Models 39-A, 39D-A, 39R-A, 39S-A & JPC-4/6



JetStar Poppers

JPC-4/6 Cart

Specifications

Model No.	Serving Per Hour	Dimensions			Approximate Weight	
		(A) Width Inches (cm)	(B) Depth Inches (cm)	(C) Height Inches (cm)	Installed lbs. (kg)	Shipping lbs. (kg)
39-A - Yellow	135 - 1 oz.	19-1/2 (49.5)	14-1/4 (36.2)	25-1/8 (63.8)	45 (20.41)	56 (25.4)
39D-A - Wood Grain	135 - 1 Oz.	21 (53.3)	14-1/4 (36.2)	25-1/8 (63.8)	45 (20.41)	56 (25.4)
39R-A - Antique	135 - 1 Oz.	19-1/2 (49.5)	14-1/4 (36.2)	25-1/8 (63.8)	45 (20.41)	56 (25.4)
39S-A - Stainless Steel	135 - 1 Oz.	19-1/2 (49.5)	14-1/4 (36.2)	25-1/8 (63.8)	45 (20.41)	56 (25.4)

Electrical Data

Model No.	Voltage		Total Wattage	NEMA Plug	
	120V	230V		120V	230V
39-A - Yellow	120V	230V	1197	5-15P	CEE7-7
39D-A - Wood Grain	120V	230V	1197	5-15P	CEE7-7
39R-A - Antique	120V	230V	1197	5-15P	CEE7-7
39S-A - Stainless Steel	120V	230V	1197	5-15P	CEE7-7

Accessory

Model No.	Description	Dimensions			Shipping Weight	
		Width Inches (cm)	Depth Inches (cm)	Height Inches (cm)	Installed lbs. (kg)	Shipping lbs (kg)
JPC-4/6	Cart for 39 and J4R Popcorn Machines	13-1/2 (34.3)	19-1/4 (48.9)	35 (88.9)	42 (19.1)	50 (22.7)

Typical Specifications

Popcorn machines are constructed of extruded aluminum corner posts and 1/8" thick tempered glass panels. Unit is provided with two 3/16" thick plexiglass doors with full length aluminum hinges with magnetic door catch and clear lexan serving drop panel. Popcorn machines are supplied with a 1000 Watt, 6 oz. capacity nickel plated steel popping kettle with a stainless steel exterior shell. A wire cage protected 75 watt display lamp, 50 watt heated stainless steel corn deck, and stainless steel old maid drawer are provided. Optional cart available to convert your counter top popper into a floor model machine. A 6' cord and NEMA 5-15 plug for 120V, a 6-15P for 240V and CEE7-7 for 230V are standard. Poppers are approved by UL and NSF. Printed in the U.S.A.

Star Manufacturing International Inc. - 10 Sunnen Drive - P.O. Box 430129 - St. Louis, MO 63143-3800

Phone: (800) 264-7827 - FAX: (800) 264-6666 - www.star-mfg.com



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 6 - COFFEE BREWER FOR GLASS DECANTERS (1 REQ'D)

Bunn-O-Matic CWT15-3-0112

12950.0112 CWT15-3 Coffee Brewer, automatic, with 3 lower warmers, pourover feature, plastic funnel, stainless decor, 120v/60-1, 13.9amp, 1670 watts

BUNN®

12 Cup Automatic Coffee Brewer with 3 Lower Warmers

ITEM#

PROJECT

DATE



Model CWT15-3 *

(3 lower warmers)

(decanters sold separately)

Dimensions: 17" H x 16.5" W x 17.7" D

(43.2cm H x 41.9cm W x 45cm D)

Features

12 Cup Automatic Coffee Brewer

- Brews 3.9 to 7.5 gallons (14.8 to 28.4 litres) of perfect coffee per hour.
- All stainless steel construction.
- Hot water faucet and back-up pourover feature on all models.
- SplashGard® funnel deflects hot liquids away from the hand.
- International electrical configurations available.

For current specification sheets and other information, go to www.bunn.com.

* International models may vary in appearance.

Related Products

Easy Clear® EQ-17-TL

Product No. : 30200.1000

Dimensions:

12⁷/₁₆" H x 2¹/₂" W x 3" D

31.6 cm H x 6.35 cm W x 7.62 cm D



Easy Clear® ED-17-TL

Product No. : 30201.1001

Dimensions: 8¹/₄" H x 2⁵/₁₆" Dia.

20.95 cm H x 5.87 cm Dia.

Paper Filter Pack

Product No. : 20115.0000

Packed per case: 1,000

Dimensions: 4¹/₄" Base x 2³/₄" Sidewall

10.8 cm Base x 6.98 cm Sidewall



Easy Pour® black decanter

Product No. : 06100.0101

Quantity: 1 (also packaged in quantities of 2, 3, 6, 12, & 24)



Easy Pour® orange decanter (for decaf)

Product No. : 06101.0101

Quantity: 1 (also packaged in quantities of 2, 3, 6, 12, & 24)

1GPR SS Portable Server on an RWS1 Warmer

1GPR Product No. : 12487.0001*

RWS1 Product No. : 12203.0010

*Also available with side handles or black decor.



Model

Agency Listing

CWT15-3



CWT15-3



CWT20-3



CWT35-3



Dimensions & Specifications

Model	Product #	Volts	Amps	Tank Heater Watts	Total Watts	Brewing Capacity	Cubic Measure	Shipping Weight	Cord Attached
CWT15-3	12950.0112	120	13.9	1320	1670	3.9 gal./hr.	6.4 ft ³	32 lbs.	Yes
CWTF15-3	12950.0212	120	13.9	1320	1670	3.9 gal./hr.	6.4 ft ³	35 lbs.	Yes
CWTF15-3*	12950.0216	120	13.9	1320	1670	3.9 gal./hr.	6.4 ft ³	36 lbs.	Yes
CWTF20-3	12950.0232	120	17.9	1800	2150	5.3 gal./hr.	6.4 ft ³	35 lbs.	No
CWTF35-3	12950.0252	120/208-240	17.1 [†]	3500	3850	7.5 gal./hr.	6.4 ft ³	35 lbs.	No
CWTF15	12950.0298	120	13.9	1320	1670	3.9 gal./hr.	6.4 ft ³	35 lbs.	Yes
(3 left lower warmers)									
CWTF35*	12950.0381	120/208-240	17.1 [†]	3500	3850	7.5 gal./hr.	6.4 ft ³	39 lbs.	No

*Stainless steel funnel [†]Current at 240 Volts

Brewing capacity: based upon incoming water temp of 60°F/15°C (140°F/60°C rise) per 1/2 gallon brew time of 4 minutes.

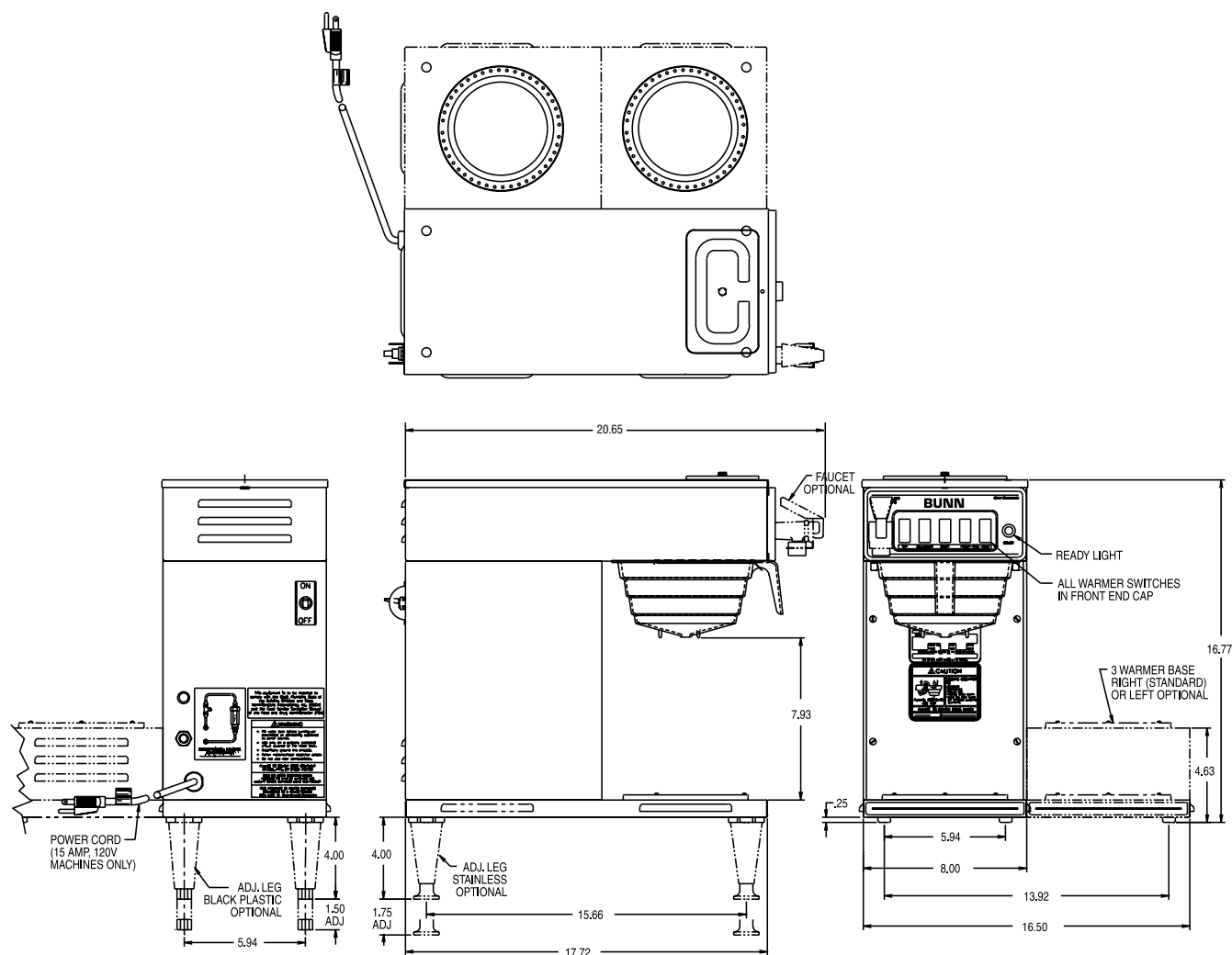
Models listed as 120/208V or 120/240V must be connected to 208V or 240V electrical service respectively. Please refer to the installation manual.

Electrical: Model 15 requires 2-wires plus ground service rated 120V, single phase, 60 Hz.

Model 20 requires 2-wires plus ground service rated 120V, single phase, 60 Hz.

Model 35 requires 3-wires plus ground service rated 120/208 or 120/240V, single phase, 60 Hz.

Plumbing: 20-90 psi (138-621 kPa). Machine supplied with 1/4" male flare fitting.



BUNN Corporation - 1400 Stevenson Drive Springfield, Illinois 62703 • 800-637-8606 • 217-529-6601 • Fax 217-529-6644 • www.bunn.com

BUNN® practices continuous product research and improvement. We reserve the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment.

All dimensions shown in inches. Bunn Corporation owns all copyrights relating to materials in this publication. Please contact Bunn Corporation to request permission to reproduce any portion of this publication.



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 7 -

Millwork Counter Furnished By Contractor <Spare>



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 8 -

Soft Drink Dispenser/Ice Bin Furnished By Others <Spare>



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 9 - MICROWAVE OVEN (1 REQ'D)

Panasonic NE-1054F

Pro Microwave Oven, 1000 Watts, single shelf, 10 programmable memory pads, double quantity pad, Braille touch-control keypad, 6 power levels, bottom energy feed, stainless steel door, digital display, cavity: 13"Wx13"Dx8-1/16"H, 120v/60/1-ph, 13.4 amps, UL, NSF

ACCESSORIES

Mfr	Qty	Model	Spec
Panasonic	1		1 year parts & labor warranty
Panasonic	1		NEMA 5-15P



NE-1054

1000 Watt* Commercial Microwave Oven

- Stainless Steel Front
- 1000* Watts of Power
- Capacity: 0.8 cubic feet
- "Grab & Go" Door Handle
- Bottom Energy Feed
- Braille Keypad
- 10 Programmable Memory pads; 20 Memory Capability
- 6 Power Levels
- 2- and 3-Stage Cooking
- Programmable and Manual Operations
- Program List/Cycle Counter
- Self Diagnostics
- 99:99 Minute Capacity
- Chef Technical Support
- Fits One Half-size 6"-Tall Pan with Cover
- Interior Oven Light
- See-Through Oven Door
- Touch Control Keypad
- Anti-Theft Equipped
- Will Ship via UPS

Technical Specifications

Power source: 120V, 60Hz, Single phase

Receptacle required: NEMA 5-15 R or
NEMA 5-20 R



Frequency: 2,450MHz

Required power: 13.4A

Output: 1000 watts*

Outer dimensions: 20 1/8" w x 16 7/8" d x 12" h

Cavity dimensions: 13" w x 13" d x 8 1/8" h

Net weight: 34 lbs.

Shipping weight: 39 lbs.

Shipping box size: 24" w x 18 3/4" d x 14 1/4" h, 3.8 cu. ft.

Timer: 99 Minutes, 99 Seconds

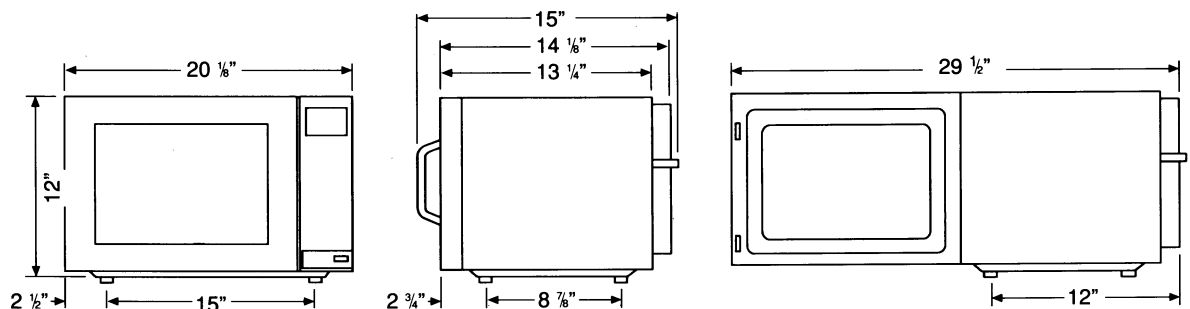
Memory Capability: 20 Programs

To specify a Panasonic Commercial Microwave Oven

The NE-1054 Commercial Microwave Oven meets or exceeds all safety performance and sanitation standards set for commercial food service microwave ovens by UL, DHHS, FCC and NSF.

Plus, oven shall have output power 1000 Watts*, stainless steel front, bottom energy feed, 10 programmable memory pads, Braille keypad, 20-memory capability, double quantity key, 6 power levels, 2- and 3-stage cooking, programmable lock, unique "quick pick" preset times and self-diagnostics, Chef/Test Kitchen technical support and 3 year limited warranty.

**I.E.C. 60705 Test Procedure. Specifications subject to change without notice.*



Panasonic
ideas for life

Panasonic Appliance & Commercial Group

Division of Matsushita Electric Corporation of America

Executive Offices:

One Panasonic Way, Panazip 4A-1, Secaucus, NJ 07094

Toll Free: 1-888-350-9590

www.panasonic.com/cmo



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 10 - WORK TABLE, 72", STAINLESS STEEL TOP (1 REQ'D)

Advance Tabco SAG-306

Work Table, 30" wide top, without splash, 72" long, with adjustable undershelf, s/s frame & shelf, 16 gauge, type 430 stainless steel top, s/s bullet feet



STAINLESS STEEL
WORK TABLES
SUPER SAVER Series - Flat Top - UNDERSHELF Style



Item #: _____ **Qty #:** _____

Model #: _____

Project #: _____

FEATURES:

Top is furnished with 1-5/8" sanitary rolled rim edges on front & back and square side edges.

To reinforce and maintain a level working surface, 24" wide tables are supplied with TWO hat channels and 30" and 36" wide tables are supplied with THREE hat channels.

Pre-engineered welded angle adapters insure ease of future drawer installation.

Aluminum die cast "leg-to-shelf" clamp secures shelf to leg eliminating unsightly nuts & bolts. Undershelf is adjustable.

CONSTRUCTION:

All TIG welded. Exposed weld areas polished to match adjacent surfaces.

Entire top mechanically polished to a satin finish.

Top is sound deadened.

Roll formed embossed galvanized hat channels are secured to top by means of structural adhesive and weld studs..

Gussets welded to support hat sections.



NEW

**Rolled Rim Edges on
Front & Back and
Square Side Edges**



Featuring as Standard:
"THE PROVEN"

**ORIGINAL ADVANCE TABCO
Adjustable Undershelf
with Die Cast Leg Clamp**

MATERIAL:

SAG-SERIES: Stainless Steel Legs & Undershelf

TOP: 16 gauge stainless steel type "430" series.

SHELF: 18 gauge stainless steel.

LEGS: 1 5/8" diameter tubular stainless steel.
1" adjustable **stainless steel** bullet feet.
Stainless steel gussets.

AG-SERIES: Galvanized Legs & Undershelf

TOP: 16 gauge stainless steel type "430" series.

SHELF: 18 gauge galvanized steel.

LEGS: 1 5/8" diameter tubular galvanized steel.
1" adjustable plastic bullet feet.
Galvanized steel gussets.

SAG-Series: Stainless Steel Legs & Undershelf

L	24" Wide	30" Wide	36" Wide
30"	SAG-240	SAG-300	
24"	SAG-242	SAG-302	
36"	SAG-243	SAG-303	SAG-363
48"	SAG-244	SAG-304	SAG-364
60"	SAG-245	SAG-305	SAG-365
72"	SAG-246	SAG-306	SAG-366
84"	SAG-247	SAG-307	SAG-367
96"	SAG-248	SAG-308	SAG-368
108"	SAG-249	SAG-309	SAG-369
120"	SAG-2410	SAG-3010	SAG-3610
132"	SAG-2411	SAG-3011	SAG-3611
144"	SAG-2412	SAG-3012	SAG-3612



AG-Series: Galvanized Steel Legs & Undershelf

L	24" Wide	30" Wide	36" Wide
30"	AG-240	AG-300	
24"	AG-242	AG-302	
36"	AG-243	AG-303	AG-363
48"	AG-244	AG-304	AG-364
60"	AG-245	AG-305	AG-365
72"	AG-246	AG-306	AG-366
84"	AG-247	AG-307	AG-367
96"	AG-248	AG-308	AG-368
108"	AG-249	AG-309	AG-369
120"	AG-2410	AG-3010	AG-3610
132"	AG-2411	AG-3011	AG-3611
144"	AG-2412	AG-3012	AG-3612

Create Your Own Efficient Workstation with the Available Standard Accessories (Visit Section K)



Customer Service Available To Assist You 1-800-645-3166 8:30 am - 8:00 pm E.S.T.

Email Orders To: customer@advancetabco.com. For Smart Fabrication™ Quotes, Email To: smartfab@advancetabco.com or Fax To: 631-586-2933

NEW YORK

Fax: (631) 242-6900

GEORGIA

Fax: (770) 775-5625

TEXAS

Fax: (972) 932-4795

NEVADA

Fax: (775) 972-1578

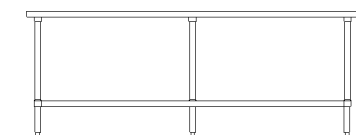
DIMENSIONS and SPECIFICATIONS

ALL DIMENSIONS ARE TYPICAL TOL $\pm .500"$

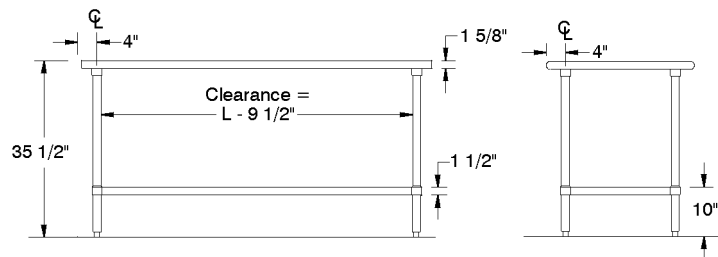
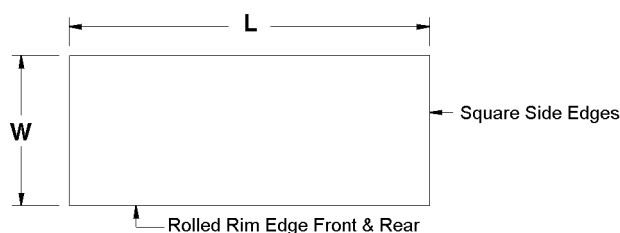
All Units Shipped Unassembled (KD) for Reduced Shipping Costs.

SAG & AG Series UNDERSHELF Style FLAT TOP

Finished size of undershelf = Length minus 5 3/4"
Width minus 5 3/4"



Units 8 ft. and larger are furnished with six (6) legs



SAG-Series: Stainless Steel Legs & Undershelf

L	24" Wide	Wt.	30" Wide	Wt.	36" Wide	Wt.
30"	SAG-240	49 lbs.	SAG-300	65 lbs.		
24"	SAG-242	31 lbs.	SAG-302	55 lbs.		
36"	SAG-243	64 lbs.	SAG-303	72 lbs.	SAG-363	88 lbs.
48"	SAG-244	79 lbs.	SAG-304	89 lbs.	SAG-364	98 lbs.
60"	SAG-245	92 lbs.	SAG-305	107 lbs.	SAG-365	118 lbs.
72"	SAG-246	109 lbs.	SAG-306	125 lbs.	SAG-366	138 lbs.
84"	SAG-247	130 lbs.	SAG-307	148 lbs.	SAG-367	164 lbs.
96"	SAG-248	145 lbs.	SAG-308	166 lbs.	SAG-368	184 lbs.
108"	SAG-249	161 lbs.	SAG-309	176 lbs.	SAG-369	190 lbs.
120"	SAG-2410	261 lbs.	SAG-3010	287 lbs.	SAG-3610	308 lbs.
132"	SAG-2411	293 lbs.	SAG-3011	324 lbs.	SAG-3611	358 lbs.
144"	SAG-2412	308 lbs.	SAG-3012	339 lbs.	SAG-3612	373 lbs.

AG-Series: Galvanized Steel Legs & Undershelf

L	24" Wide	Wt.	30" Wide	Wt.	36" Wide	Wt.
30"	AG-240	49 lbs.	AG-300	65 lbs.		
24"	AG-242	31 lbs.	AG-302	55 lbs.		
36"	AG-243	64 lbs.	AG-303	72 lbs.	AG-363	88 lbs.
48"	AG-244	79 lbs.	AG-304	89 lbs.	AG-364	98 lbs.
60"	AG-245	92 lbs.	AG-305	107 lbs.	AG-365	118 lbs.
72"	AG-246	109 lbs.	AG-306	125 lbs.	AG-366	138 lbs.
84"	AG-247	130 lbs.	AG-307	148 lbs.	AG-367	164 lbs.
96"	AG-248	145 lbs.	AG-308	166 lbs.	AG-368	184 lbs.
108"	AG-249	161 lbs.	AG-309	176 lbs.	AG-369	190 lbs.
120"	AG-2410	261 lbs.	AG-3010	287 lbs.	AG-3610	308 lbs.
132"	AG-2411	293 lbs.	AG-3011	324 lbs.	AG-3611	358 lbs.
144"	AG-2412	308 lbs.	AG-3012	339 lbs.	AG-3612	373 lbs.





Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 11 - OVERSHELF, TABLE MOUNTED (1 REQ'D)

KESCO OTS-15-72

Shelf, table mounted, single deck, 15" wide, 6 feet long, 18 gauge 430 stainless steel, not adjustable, old style

ACCESSORIES

Mfr	Qty	Model	Spec
Advance Tabco	1		Center of table shelf location



TABLE MOUNTED ALL WELDED STAINLESS STEEL SHELVING



Item #: _____ **Qty #:** _____

Model #: _____

Project #: _____

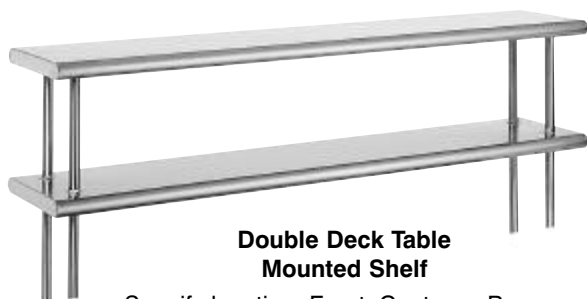


(Table Not Included)



**Single Deck Table
Mounted Shelf**

Specify location. Front, Center or Rear.



**Double Deck Table
Mounted Shelf**

Specify location. Front, Center or Rear.

For 18" Wide Shelves, See PT Shelving

SINGLE DECK

L	10" Wide	Wt	12" Wide	Wt	15" Wide	Wt
36"	OTS-10-36	17 lbs	OTS-12-36	20 lbs.	OTS-15-36	24 lbs.
48"	OTS-10-48	20 lbs	OTS-12-48	25 lbs.	OTS-15-48	25 lbs.
60"	OTS-10-60	24 lbs	OTS-12-60	31 lbs.	OTS-15-60	31 lbs.
72"	OTS-10-72	29 lbs	OTS-12-72	37 lbs.	OTS-15-72	37 lbs.
84"	OTS-10-84	35 lbs	OTS-12-84	43 lbs.	OTS-15-84	43 lbs.
96"	OTS-10-96	41 lbs	OTS-12-96	50 lbs.	OTS-15-96	50 lbs.
108"	OTS-10-108	49 lbs	OTS-12-108	59 lbs.	OTS-15-108	59 lbs.
120"	OTS-10-120	57 lbs	OTS-12-120	68 lbs.	OTS-15-120	68 lbs.
132"	OTS-10-132	68 lbs	OTS-12-132	82 lbs.	OTS-15-132	82 lbs.
144"	OTS-10-144	79 lbs	OTS-12-144	98 lbs.	OTS-15-144	98 lbs.

Units 8 ft. and larger are furnished with three (3) sets of tubing supports.

For 1" Rear Turn Up, add "R" after model # (Example: OTS-12-60R)

DOUBLE DECK

L	10" Wide	Wt	12" Wide	Wt	15" Wide	Wt
36"	ODS-10-36	28 lbs.	ODS-12-36	32 lbs.	ODS-15-36	37 lbs.
48"	ODS-10-48	36 lbs.	ODS-12-48	40 lbs.	ODS-15-48	44 lbs.
60"	ODS-10-60	45 lbs.	ODS-12-60	50 lbs.	ODS-15-60	55 lbs.
72"	ODS-10-72	54 lbs.	ODS-12-72	60 lbs.	ODS-15-72	66 lbs.
84"	ODS-10-84	63 lbs.	ODS-12-84	70 lbs.	ODS-15-84	77 lbs.
96"	ODS-10-96	72 lbs.	ODS-12-96	80 lbs.	ODS-15-96	88 lbs.
108"	ODS-10-108	81 lbs.	ODS-12-108	90 lbs.	ODS-15-108	99 lbs.
120"	ODS-10-120	90 lbs.	ODS-12-120	101 lbs.	ODS-15-120	110 lbs.
132"	ODS-10-132	102 lbs.	ODS-12-132	112 lbs.	ODS-15-132	121 lbs.
144"	ODS-10-144	114 lbs.	ODS-12-144	121 lbs.	ODS-15-144	132 lbs.

Units 8 ft. and larger are furnished with three (3) sets of tubing supports.

For 1" Rear Turn Up, add "R" after model # (Example: ODS-12-60R)

FEATURES:

All welded stainless steel shelving.
Stainless steel legs: 10" & 12" wide - 1" tubing.
15" wide - 1-5/8" tubing.

Shelves have front & rear rolled edges and sides have square edges.

CONSTRUCTION:

All TIG welded.
Exposed surfaces polished to a satin finish.

MATERIAL:

All Shelves are 18 gauge type "430" stainless steel.
Holes are required in Table Top.

MODIFICATIONS:

Use **TA-47** for special mounting hardware to easily add to existing tables. (for special modifications, consult factory)

Use **TA-99** for 16 Gauge, 304 Stainless Steel Upgrade.



Customer Service Available To Assist You 1-800-645-3166 8:30 am - 8:00 pm E.S.T.

Email Orders To: customer@advancetabco.com. For Smart Fabrication™ Quotes, Email To: smartfab@advancetabco.com or Fax To: 631-586-2933

NEW YORK
Fax: (631) 242-6900

GEORGIA
Fax: (770) 775-5625

TEXAS
Fax: (972) 932-4795

NEVADA
Fax: (775) 972-1578

DETAILS and SPECIFICATIONS

TOL $\pm .500"$

ALL DIMENSIONS ARE TYPICAL

SINGLE DECK TABLE MOUNTED

Specify location. Front, Center or Rear.



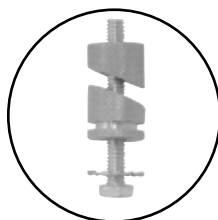
**For 18" Wide Shelves,
See PT Shelving**

DOUBLE DECK TABLE MOUNTED

Specify location. Front, Center or Rear.



**For 18" Wide Shelves,
See PT Shelving**



Brass Expander Table
Mounting Hardware Included
with OTS & ODS Shelving





Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 12 - DRAWER (1 REQ'D)

Advance Tabco SS-2020

Deluxe Drawer, 20" x 20" x 5", stainless steel, with drawer slides



DELUXE AND BUDGET DRAWERS

- Stainless Steel Front
- Ball Bearing Slides
- Removable Inset



MODEL #	Width	Description	Inset
SS-2015	17 3/4"	Stainless Steel	20" x 15" x 5"
GZ-2015	17 3/4"	Galvanized	20" x 15" x 5"
SS-2020	22 3/4"	Stainless Steel	20" x 20" x 5"
GZ-2020	22 3/4"	Galvanized	20" x 20" x 5"

DELUXE AND BUDGET DRAWER ACCESSORIES

Pad Lock Hasp TA-13

Drawer Lock TA-14
(Does not apply to Budget Drawers)

Drawers Modified to
15" L/R x 20" F/B* TA-50

Drawer Adapter/Non Catalog Tables
(specify table width) TA-90

- Friction Slides
- Die Formed Handle



MODEL #	Width	Description	Inset
FS-2015	17 3/4"	Stainless Steel	20" x 15" x 5"
FG-2015	17 3/4"	Galvanized	20" x 15" x 5"
FS-2020	22 3/4"	Stainless Steel	20" x 20" x 5"
FG-2020	22 3/4"	Galvanized	20" x 20" x 5"

Item #: _____ Qty #: _____

Model #: _____

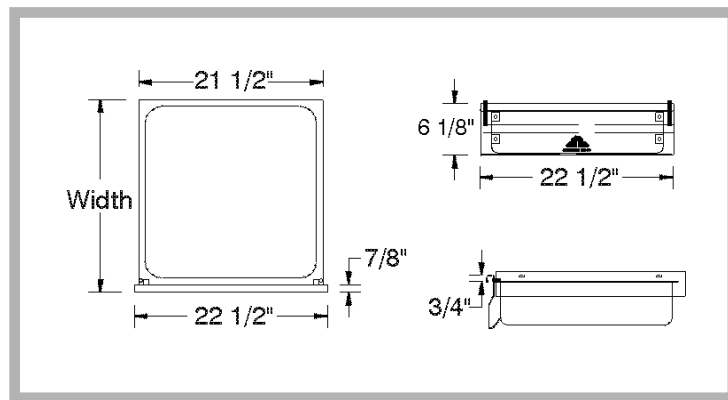
Project #: _____

DELUXE SERIES DRAWERS

DETAILS and SPECIFICATIONS

TOL ± .500"

ALL DIMENSIONS ARE TYPICAL

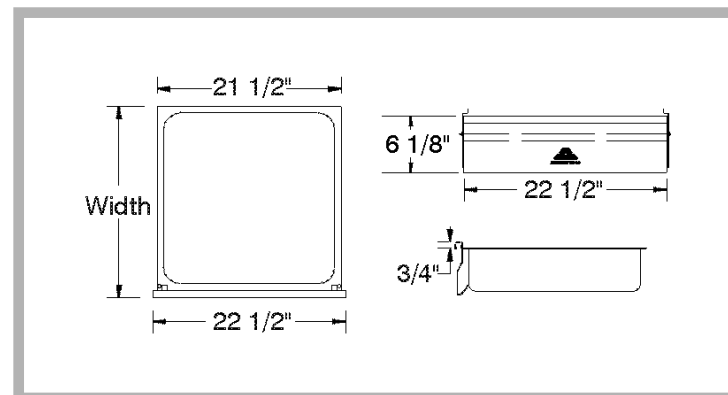


BUDGET SERIES DRAWERS

DETAILS and SPECIFICATIONS

TOL ± .500"

ALL DIMENSIONS ARE TYPICAL



Customer Service Available To Assist You **1-800-645-3166** 8:30 am - 8:00 pm E.S.T.

Email Orders To: customer@advancetabco.com. For Smart Fabrication™ Quotes, Email To: smartfab@advancetabco.com or Fax To: 631-586-2933

NEW YORK

Fax: (631) 242-6900

GEORGIA

Fax: (770) 775-5625

TEXAS

Fax: (972) 932-4795

NEVADA

Fax: (775) 972-1578



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 13 - WORK TABLE, 60", STAINLESS STEEL TOP (1 REQ'D)

Advance Tabco SAG-305

Work Table, 30" wide top, without splash, 60" long, with adjustable undershelf, s/s frame & shelf, 16 gauge, type 430 stainless steel top, s/s bullet feet



STAINLESS STEEL
WORK TABLES
SUPER SAVER Series - Flat Top - UNDERSHELF Style



Item #: _____ **Qty #:** _____

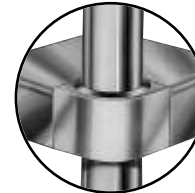
Model #: _____

Project #: _____



NEW

**Rolled Rim Edges on
Front & Back and
Square Side Edges**



Featuring as Standard:
"THE PROVEN"

**ORIGINAL ADVANCE TABCO
Adjustable Undershelf
with Die Cast Leg Clamp**

FEATURES:

Top is furnished with 1-5/8" sanitary rolled rim edges on front & back and square side edges.

To reinforce and maintain a level working surface, 24" wide tables are supplied with TWO hat channels and 30" and 36" wide tables are supplied with THREE hat channels.

Pre-engineered welded angle adapters insure ease of future drawer installation.

Aluminum die cast "leg-to-shelf" clamp secures shelf to leg eliminating unsightly nuts & bolts. Undershelf is adjustable.

CONSTRUCTION:

All TIG welded. Exposed weld areas polished to match adjacent surfaces.

Entire top mechanically polished to a satin finish.

Top is sound deadened.

Roll formed embossed galvanized hat channels are secured to top by means of structural adhesive and weld studs..

Gussets welded to support hat sections.

MATERIAL:

SAG-SERIES: Stainless Steel Legs & Undershelf

TOP: 16 gauge stainless steel type "430" series.

SHELF: 18 gauge stainless steel.

LEGS: 1 5/8" diameter tubular stainless steel.
1" adjustable **stainless steel** bullet feet.
Stainless steel gussets.

AG-SERIES: Galvanized Legs & Undershelf

TOP: 16 gauge stainless steel type "430" series.

SHELF: 18 gauge galvanized steel.

LEGS: 1 5/8" diameter tubular galvanized steel.
1" adjustable plastic bullet feet.
Galvanized steel gussets.

SAG-Series:
Stainless Steel Legs & Undershelf

L	24" Wide	30" Wide	36" Wide
30"	SAG-240	SAG-300	
24"	SAG-242	SAG-302	
36"	SAG-243	SAG-303	SAG-363
48"	SAG-244	SAG-304	SAG-364
60"	SAG-245	SAG-305	SAG-365
72"	SAG-246	SAG-306	SAG-366
84"	SAG-247	SAG-307	SAG-367
96"	SAG-248	SAG-308	SAG-368
108"	SAG-249	SAG-309	SAG-369
120"	SAG-2410	SAG-3010	SAG-3610
132"	SAG-2411	SAG-3011	SAG-3611
144"	SAG-2412	SAG-3012	SAG-3612



AG-Series:
Galvanized Steel Legs & Undershelf

L	24" Wide	30" Wide	36" Wide
30"	AG-240	AG-300	
24"	AG-242	AG-302	
36"	AG-243	AG-303	AG-363
48"	AG-244	AG-304	AG-364
60"	AG-245	AG-305	AG-365
72"	AG-246	AG-306	AG-366
84"	AG-247	AG-307	AG-367
96"	AG-248	AG-308	AG-368
108"	AG-249	AG-309	AG-369
120"	AG-2410	AG-3010	AG-3610
132"	AG-2411	AG-3011	AG-3611
144"	AG-2412	AG-3012	AG-3612

Create Your Own Efficient Workstation with the Available Standard Accessories (Visit Section K)



Customer Service Available To Assist You 1-800-645-3166 8:30 am - 8:00 pm E.S.T.

Email Orders To: customer@advancetabco.com. For Smart Fabrication™ Quotes, Email To: smartfab@advancetabco.com or Fax To: 631-586-2933

NEW YORK

Fax: (631) 242-6900

GEORGIA

Fax: (770) 775-5625

TEXAS

Fax: (972) 932-4795

NEVADA

Fax: (775) 972-1578

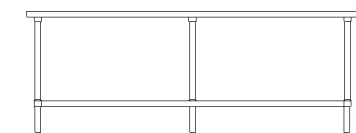
DIMENSIONS and SPECIFICATIONS

ALL DIMENSIONS ARE TYPICAL TOL $\pm .500"$

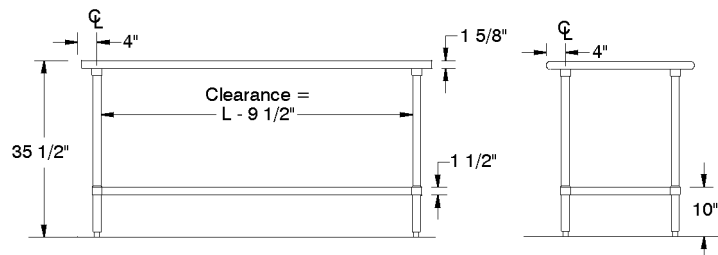
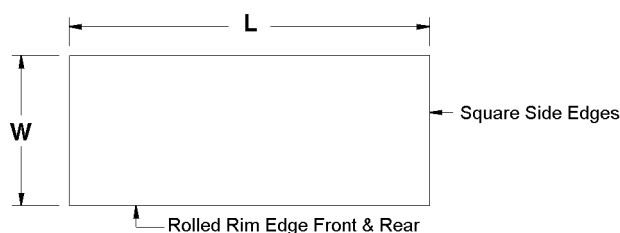
All Units Shipped Unassembled (KD) for Reduced Shipping Costs.

SAG & AG Series UNDERSHELF Style FLAT TOP

Finished size of undershelf = Length minus 5 3/4"
Width minus 5 3/4"



Units 8 ft. and larger are furnished with six (6) legs



SAG-Series: Stainless Steel Legs & Undershelf

L	24" Wide	Wt.	30" Wide	Wt.	36" Wide	Wt.
30"	SAG-240	49 lbs.	SAG-300	65 lbs.		
24"	SAG-242	31 lbs.	SAG-302	55 lbs.		
36"	SAG-243	64 lbs.	SAG-303	72 lbs.	SAG-363	88 lbs.
48"	SAG-244	79 lbs.	SAG-304	89 lbs.	SAG-364	98 lbs.
60"	SAG-245	92 lbs.	SAG-305	107 lbs.	SAG-365	118 lbs.
72"	SAG-246	109 lbs.	SAG-306	125 lbs.	SAG-366	138 lbs.
84"	SAG-247	130 lbs.	SAG-307	148 lbs.	SAG-367	164 lbs.
96"	SAG-248	145 lbs.	SAG-308	166 lbs.	SAG-368	184 lbs.
108"	SAG-249	161 lbs.	SAG-309	176 lbs.	SAG-369	190 lbs.
120"	SAG-2410	261 lbs.	SAG-3010	287 lbs.	SAG-3610	308 lbs.
132"	SAG-2411	293 lbs.	SAG-3011	324 lbs.	SAG-3611	358 lbs.
144"	SAG-2412	308 lbs.	SAG-3012	339 lbs.	SAG-3612	373 lbs.

AG-Series: Galvanized Steel Legs & Undershelf

L	24" Wide	Wt.	30" Wide	Wt.	36" Wide	Wt.
30"	AG-240	49 lbs.	AG-300	65 lbs.		
24"	AG-242	31 lbs.	AG-302	55 lbs.		
36"	AG-243	64 lbs.	AG-303	72 lbs.	AG-363	88 lbs.
48"	AG-244	79 lbs.	AG-304	89 lbs.	AG-364	98 lbs.
60"	AG-245	92 lbs.	AG-305	107 lbs.	AG-365	118 lbs.
72"	AG-246	109 lbs.	AG-306	125 lbs.	AG-366	138 lbs.
84"	AG-247	130 lbs.	AG-307	148 lbs.	AG-367	164 lbs.
96"	AG-248	145 lbs.	AG-308	166 lbs.	AG-368	184 lbs.
108"	AG-249	161 lbs.	AG-309	176 lbs.	AG-369	190 lbs.
120"	AG-2410	261 lbs.	AG-3010	287 lbs.	AG-3610	308 lbs.
132"	AG-2411	293 lbs.	AG-3011	324 lbs.	AG-3611	358 lbs.
144"	AG-2412	308 lbs.	AG-3012	339 lbs.	AG-3612	373 lbs.





Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 14 - ICE MAKER, CUBE-STYLE (1 REQ'D)

Manitowoc IY-0504A

Indigo™ Series Ice Maker, cube-style, air-cooled, self-contained condenser, up to 560-lb approximately/24 hours, stainless steel finish, half-dice size cubes, ENERGY STAR® Qualified

ACCESSORIES

Mfr	Qty	Model	Spec
Manitowoc	1		3 year parts & labor warranty
Manitowoc	1		5 year parts & labor warranty on evaporator
Manitowoc	1		5- year parts & 3- year labor warranty on compressor
Manitowoc	1		(-161) 115v/60/1ph, std. 14.2 amps,
Manitowoc	1	AR-10000	Arctic Pure® Primary Water Filter Assembly, includes head, shroud, hardware, mounting assembly, and one filter cartridge, 14,000 gallon capacity, 0-600 lbs./ice per day
Manitowoc	1	B-570	Ice Bin, w/top-hinged front-opening door, approximately 430 lb ice storage capacity, for top-mounted ice maker, stainless steel exterior
Manitowoc	1		3 year parts & labor warranty
Manitowoc	1		6" adjustable stainless steel legs, std.



Indigo™ Series 500 Ice Cube Machine

Indigo™ Series 500 Ice Cube Machine

Model: ☐ ID-0502A ☐ IY-0504A ☐ ID-0503W ☐ IY-0505W ☐ ID-0592N ☐ IY-0594N



Indigo Series i-500
Ice Machine on B-570 Bin

Designed for operators who know that ice is critical to their business, the Indigo™ Series ice machine's preventative diagnostics continually monitor itself for reliable ice production. Improvements in cleanability and programmability make your ice machine easy to own and less expensive to operate.

- **Space-Saving Design** – Up to 560 lbs. (254 kgs.) daily ice production and only 30" (76.20 cm) wide.
- **Intelligent Diagnostics** – provide 24 hour preventative maintenance and diagnostic feedback for trouble free operation.
- **Acoustical Ice Sensing Probe** – for reliable operation in challenging water conditions.
- **EasyRead Display** – communicates operating status, cleaning reminders, and asset information through a blue illuminated display.
- **Programmable Ice Production** – by On/Off Time, Ice Volume or Bin Level (with accessory bin level control) further improves energy efficiency and savings.
- **Easy to Clean Foodzone** – Hinged front door swings out for easy access. Removable water-trough, distribution tube, curtain, and sensing probes for fast and efficient cleaning. Select components made with AlphaSan® antimicrobial.
- **DuraTech™ Exterior** – provides superior corrosion resistance. Stainless finish with innovative clear-coat resists fingerprints and dirt.
- Available **LuminIce™ Growth Inhibitor** controls the growth of bacteria and yeast within the foodzone.

Ice Machine Electric

115/60/1 standard.
(208-230/60/1 and 230/50/1 also available)

Minimum circuit ampacity:

Air cooled: 14.2
Water Cooled: 13.5
Remote: 20.0

Maximum fuse size:

Air Cooled: 20.0
Water Cooled: 20.0
Remote: 25.0

Specifications

BTU Per Hour:

6,100 (average) 6,900 (peak)

Refrigerant:

R-404A CFC-free

Operating Limits:

- Ambient Temperature Range: 35° to 110°F (1.7° to 43.3°C)
Water Temperature Range: 35° to 90°F (1.7° to 32.2°C)
- Water Pressure Ice Maker Water In:
Min. 20 psi (137.9 kPa)
Max. 80 psi (551.1 kPa)



Ice Shape



Half Dice
3/8" x 1 1/8" x 7/8"
(.95 x 2.86 x 2.22 cm)



Dice
7/8" x 7/8" x 7/8"
(2.22 x 2.22 x 2.22 cm)



2110 South 26th Street
PO Box 1720
Manitowoc, WI 54221-1720 USA

Tel: 1.920.682.0161
Fax: 1.920.683.7589

www.manitowocice.com

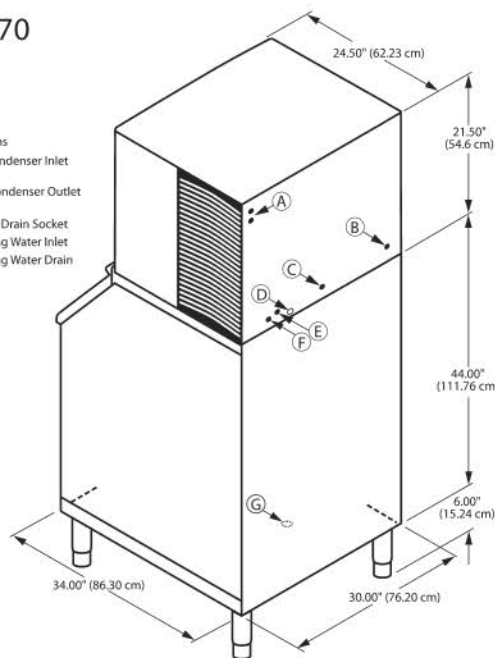




Indigo™ Series 500 Ice Cube Machine

i-500 on B-570 Storage Bin

- (A) Electrical Entrance (2) Options
- (B) 3/8" (0.95 cm) F.P.T. Water Condenser Inlet (water-cooled units)
- (C) 1/2" (1.27 cm) F.P.T. Water Condenser Outlet (water-cooled units)
- (D) 1/2" (1.27 cm) Auxiliary Base Drain Socket
- (E) 3/8" (0.95 cm) F.P.T. Ice Making Water Inlet
- (F) 1/2" (1.27 cm) F.P.T. Ice Making Water Drain
- (G) 3/4" (1.91 cm) Bin Drain



Installation Note
Minimum installation clearance:

Top/sides: 8" (20.32 cm);
Back is 5" (12.7 cm)

Space-Saving Designs



	i-500 B-400	i-500 B-570
Height	59.50" 151.13 cm	71.50" 181.61 cm
Width	30.00" 76.20 cm	30.00" 76.20 cm
Depth	34.00" 86.30 cm	34.00" 86.30 cm
Bin Storage	290 lbs. 131.54 kgs.	430 lbs. 195.04 kgs.

Height includes adjustable bin legs 6.00" to 8.00", (15.24 to 20.32 cm) set at 6.00" (15.24 cm).

Specifications

			Ice Production 24 Hours		Power Usage kWh/100 lbs. @90° Air/70°F	Water Usage/ 100 lbs. 45.4 kgs. of Ice	ENERGY STAR®
	Model	Ice Shape	70° Air/ 50°F Water	90° Air/ 70°F Water	1 Ph	Potable Water	
AIR-COOLED	ID-0502A	dice 	530 lbs.	390 lbs.	5.79	19.9 Gal.	★
			240 kgs.	177 kgs.		75.3 L	
	IY-0504A	half-dice 	560 lbs.	410 lbs.	5.73	19.9 Gal.	★
			254 kgs.	186 kgs.		75.3 L	
WATER-COOLED	ID-0503W	dice 	550 lbs.	430 lbs.	4.58	19.9 Gal.	NA
			249 kgs.	195 kgs.		75.3 L	
	IY-0505W	half-dice 	550 lbs.	440 lbs.	4.52	19.9 Gal.	NA
			249 kgs.	200 kgs.		75.3 L	
* Water-cooled Condenser Water Usage / 100 lbs. /45.4 kgs. Of Ice: 165 gal/625 L.							
* Water-cooled models are excluded from ENERGY STAR qualification.							
REMOTE-COOLED	ID-0592N	dice 	480 lbs.	430 lbs.	5.79	19.9 Gal.	★
			218 kgs.	195 kgs.		75.3 L	
	IY-0594N	half-dice 	510 lbs.	440 lbs.	5.73	19.9 Gal.	★
			231 kgs.	200 kgs.		75.3 L	

Order ice storage bin separately. Ice storage bin and JC-0495 remote condenser must be ordered separately. Consult remote condenser specification sheet for details.

Accessories

LuminIce™ Growth Inhibitor
reduces yeast and bacteria growth for a cleaner ice machine.



Bin Level Control
Allows ice bin level to be automatically set. Built-in LED light illuminates bin.



Arctic Pure® Water Filters
Reduces sediment and chlorine odors for better tasting ice.



AuCS®
schedules and performs routine ice machine cleaning automatically.



2110 South 26th Street
PO Box 1720
Manitowoc, WI 54221-1720 USA

Tel: 1.920.682.0161
Fax: 1.920.683.7589
www.manitowocice.com



Mixed Sources
Product group from well-managed forests, controlled sources and recycled wood or fiber.
www.fsc.org Cert no. SW-COC-001886
© 1996 Forest Stewardship Council



4769 (replaces 2830F S-500) ©2011 Manitowoc /111 Continuing product improvement may necessitate change of specifications without notice.



Arctic Pure®

Ice Machine - Water Filtration



Arctic Pure®
Ice Machine - Water Filtration

Models

☐ AR-PRE

☐ AR-10000

☐ AR-20000

☐ AR-40000


AR-PRE



AR-10000



AR-20000



AR-40000

- Pre-filter, dirt and rust sediment reduction

- 1 micron particle reduction
- 14,000 gal. capacity
- 20 grams siliphos

Lbs. of ice per day 0-600

- 1 micron particle reduction
- 20,000 gal. capacity
- 40 grams siliphos

Lbs. of ice per day 601-1000

- 1 micron particle reduction
- 40,000 gal. capacity
- 80 grams siliphos

Lbs. of ice per day 1001-2,500

Standard Features

Over 60% of ice machine maintenance calls are water-related! Arctic Pure® water filters are designed exclusively for ice machine applications and will reduce these calls.

Built-in scale inhibitor.

- Siliphos is designed into the filters to reduce scale build-up even under the hardest water conditions.

Reduces chlorine taste and odor.

- All filtration and scale reduction material is NSF and/or FDA compliant and is engineered to reduce chlorine taste and odor. Ice looks and tastes better.

Graded density carbon block filter.

- Provides superior dirt holding capacity and fine sediment reduction.

Sanitary quick change housing.

- Design minimizes contamination of filter media during filter cartridge change-out. All filters are provided with automatic shut-off and pressure relief valves.

Warranty

3-Year parts and labor warranty on head, shroud, hardware, and mounting assembly (water filter cartridge not included).



AR-10000
AR-20000
AR-40000

Chlorine reduction taste and odor reduction Class I.

Visit www.nsf.org for listed product claims.

2110 South 26th Street
PO Box 1720
Manitowoc, WI 54221-1720 USA

Tel: 1.920.682.0161
Fax: 1.920.683.7589

www.manitowocice.com





Ice Machine - Water Filtration

Arctic Pure®

Dimensions

Model	Dimensions						Mtg. Holes		Weight	
	Height		Width		Depth		Center to Center			
	inches	cm	inches	cm	inches	cm	inches	cm	lbs.	kgs.
AR-Pre	17.09	43.41	6.72	17.10	4.00	10.16	1.50	3.81	4	1.81
AR-10000	17.09	43.41	5.72	14.50	4.00	10.16	1.50	3.81	5	1.81
AR-20000	21.34	54.2	5.72	14.50	4.00	10.16	1.50	3.81	5	2.27
AR-40000	21.23	54.1	15.88	40	5.00	12.7	Top 11.50	29.2	12	5.44
							Bottom 9.75	24.8		

Specifications

Maximum Operating Pressure:

25–125 psi (1.7–8.6 bar)

Maximum Operating Temperature:

35°–100°F (1.7°–38°C)

Flow Rate: AR-10000/0.75 gpm (2.84 LPM)

AR-20000/0.75 gpm (2.84 LPM)

AR-40000 1.5 gpm (5.68 LPM)

Cartridge Housing Material:

Talc Filled Polypropylene

Primary Filter

1 micron particle reduction. Filter media is graded density carbon block containing Siliphos scale inhibitor, which holds dissolved minerals in suspension. (AR-10000/20 grams siliphos, AR-20000/40 grams siliphos, AR-40000/80 grams siliphos – 40 grams per cartridge).

Inlet/Outlet Fittings:

- 3/8" John Guess

Optional Pre-Filter:

An optional pre-filter is recommended for ice machine installations in areas with high particulate matter (dirty water). The pre-filter extends the filtration efficiency and working life of the primary filter cartridge where this condition exists. The Manitowoc pre-filter is a cost-efficient solution to the particulate matter (dirty water) problem because pre-filter replacements are more economical than a primary filter cartridge.

Replacement Cartridges:

Pre-Filter K-00337

Primary Filter AR-10000 K-00338

AR-20000/40000 K-00339

To insure maximum filtration efficiency, replace the primary filter cartridge every 6 months. A filter gauge will indicate if replacement is necessary prior to six months usage (below 20 psig).

Important Notice:

Read this performance sheet and compare the capabilities of this unit with your actual water treatment needs. It is recommended that you have your water supply tested to determine your actual water treatment needs before purchasing a water treatment unit.

Warning:

Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfections before or after the unit.

Caution:

The filter must be protected from freezing. Failure to do so may result in cracking of the filter housing and water leakage.

Note:

Before using the Arctic Pure on non-Manitowoc machines consult the ice machine manufacturer for water supply usage requirements.

Ice Model	Model			
	AR-Pre	AR-10000	AR-20000	AR-40000
QM30	•	•		
QM45	•	•		
Q-130	•	•		
Q-210	•	•		
Q-270	•	•		
S-300	•	•		
S-322	•	•		
S-422	•	•		
S-450	•	•		
S-500	•	•		
S-600	•	•		
S-850	•		•	
S-1000	•		•	
S-1200	•			•
S-1400	•			•
S-1600	•			•
S-1800	•			•
S-1470C	•			•
S-1870C	•			•
S-2170C	•			•
IB-600	•	•		
IB-800	•		•	
IB-1000	•		•	
SN-12/20	•	•		
RF0244	•	•		
RF0266	•	•		
RF0300	•	•		
RF0388	•	•		
RF0399	•	•		
RF0650	•		•	
RF1200	•			•

2110 South 26th Street
PO Box 1720
Manitowoc, WI 54221-1720 USA

Tel: 1.920.682.0161
Fax: 1.920.683.7589
www.manitowocice.com





Ice Storage Bins

Model

☐ B-170 ☐ B-320 ☐ B-400 ☐ B-420 ☐ B-570 ☐ B-970 ☐ C-730

B-Style

.75" (1.90 cm) Bin drain



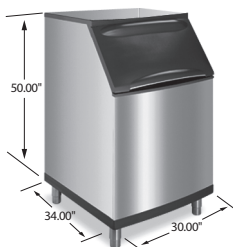
B-170
150 lbs. (68 kgs)



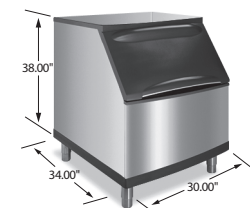
B-420
310 lbs. (141 kgs)



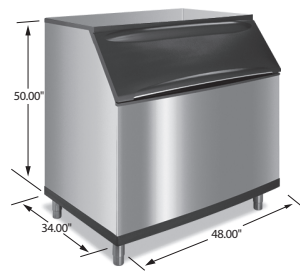
B-320
210 lbs. (95 kgs)



B-570
430 lbs. (195 kgs)



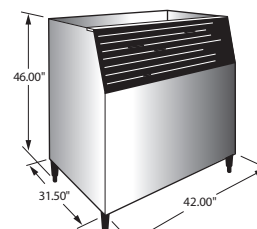
B-400
290 lbs. (132 kgs)



B-970
710 lbs. (323 kgs)

C-Style

.75" (1.90 cm) Bin drain



C-730
560 lbs. (254 kgs)

Ice Machine Deflectors Required

S-Series 450, 500, 600, 850, 1000, 1200	K-00347
S-Series 1400, 1600, 1800	K-00349
1470C, 1870C, 2170C	K-00383 for side-by-side ice machines. K-00382 for one ice machine.
3070C, 3300	K-00391

Bin Leg Options

4" (10.16 cm), 6" (15.24 cm) and 12" (30.48 cm) adjustable legs in painted and stainless steel and 2.5" (6.35 cm), and 7.625" (19.37cm) casters available for most models. Contact factory for model number and order information.

Warranty

Bin & Accessories: 3 Year Parts & Labor.



2110 South 26th Street
PO Box 1720
Manitowoc, WI 54221-1720 USA

Tel: 1.920.682.0161
Fax: 1.920.683.7589

www.manitowocice.com





Ice Storage Bins

B-Style

Soft durometer trim around opening helps silence bin door closing. Convenient stay-open design keeps bin door out of the way while scooping ice. Internal scoop holder stays above ice line for easy access and better sanitation. DuraTech™ stainless finish exterior is durable, corrosion resistant and attractive.

Bin Model	Capacity		Fits S-Series Ice Cube Machine Indicated																Dimensions					
																			Height		Width		Depth	
	lbs.	kgs.	300	322	422	450	500	600	850	1000	1200	1400	1470C	1600	1800	1870C	2170	in.	cm.	in.	cm.	in.	cm.	
B-170	150	68	●	3	3	●	●											25	63.50	30	76.20	29.50	74.92	
B-320	210	95		●	●													38	96.52	22	55.88	34	86.36	
B-400	290	132	●	3	3	●	●	●	●	●	●							38	96.52	30	76.20	34	86.36	
B-420	310	141		●	●													50	127	22	55.88	34	86.36	
B-570	430	195	●	3	3	●	●	●	●	●	●							50	127	30	76.20	34	86.36	
B-970	710	323	1			1	1	2	2	2	2	●	4	●	●	4	4	50	127	48	121.92	34	86.36	

1 K-00369 adapter required.

3 K-00365 adapter required.

2 K-00370 adapter required.

4 K-00385 adapter required.

One set of legs included. Adjustable from 6.00" to 7.75" (15.24 to 20.32 cm). Included with bin.

Storage capacity is based on 80% of total volume x 30 lb/ft³ average density of ice.

C-Style

DuraTech™ stainless finish exterior is durable, corrosion-resistant and attractive. Bin door, although rectangular, is gray ABS to match S-Series ice machine trim color. C-Style bin does not include scoop holder, bin door design, or rounded corner enhancements included with S-Style or B-Style design. Bin leg is bullet design, adjustable from 6.00" to 7.75" (15.24 cm to 19.685 cm) and painted black. Bin liner is one-piece (seamless) "rotocast" polyethylene. Liner won't rust, dent, chip, crack or discolor.

Bin Model	Capacity		Fits S-Series Ice Cube Machine Indicated					Dimensions					
								Height		Width		Depth	
	lbs.	kgs.	S322 S422	S300 S450 S500	S600 S850 S1000 S1200	S1400 S1600 S1800	S1470C S1870C S2170C	in.	cm.	in.	cm.	in.	cm.
C-730S	560	254	6	5	5		7	46	116.84	42	106.68	31.50	80.01

5 C-730 includes K-00023 adapter to mount 30" ice machine.

6 K-00117 adapter required.

7 K-00386 adapter required.

Gray painted 6.00" (15.24 cm) bullet legs included, adjustable from 6.00" to 7.00" (15.24 to 17.78 cm).

Storage capacity is based on 80% of total volume x 30 lb/ft³ average density of ice.





Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 15 - FREEZER, REACH-IN (1 REQ'D)

True Food Service Equipment T-23F

Freezer, Reach-in, one-section, -10° F, (3) shelves, stainless steel front & exterior, aluminum ends, white aluminum interior with stainless steel floor, (1) s/s hinged door with lock, dial thermometer, 4" castors, 1/3HP, 115v/60/1-ph, NEMA 5-15P, 7.2 amps, ENERGY STAR®, MADE IN USA

ACCESSORIES

Mfr	Qty	Model	Spec
True Food Service Equipment	1		Self-contained refrigeration standard
True Food Service Equipment	1		4" Swivel castors, standard (adds 5" to OA height)
True Food Service Equipment	1		Warranty - 5 year compressor (self-contained only), please visit www.truemfg.com for specifics
True Food Service Equipment	1		Warranty - 1 year parts and labor, please visit www.truemfg.com for specifics
True Food Service Equipment	1		Door hinged right standard

 TRUE FOOD SERVICE EQUIPMENT, INC. 2001 East Terra Lane • O'Fallon, Missouri 63366 (636)240-2400 • Fax (636)272-2408 • (800)325-6152 • Intl Fax# (001)636-272-7546 Parts Dept. (800)424-TRUE • Parts Dept. Fax# (636)272-9471 • www.truemfg.com	Project Name: _____		A/A # S/S #
	Location: _____		
	Model: T-23F	T-Series: <i>Reach-In Solid Swing Door -10°F Freezer</i>	



T-23F

- ▶ True's solid door reach-in's are designed with enduring quality that protects your long term investment.
- ▶ Designed using the highest quality materials and components to provide the user with colder product temperatures, lower utility costs, exceptional food safety and the best value in today's food service marketplace.
- ▶ Extra large evaporator coil balanced with higher horsepower compressor and large condenser maintains -10°F (-23.3°C) cabinet temperatures. Ideally suited for both frozen foods and ice cream.
- ▶ Stainless steel solid door and front. The very finest stainless with higher tensile strength for fewer dents and scratches.
- ▶ Adjustable, heavy duty PVC coated shelves.
- ▶ Positive seal self-closing door. Lifetime guaranteed door hinges and torsion type closure system.
- ▶ Automatic defrost system time-initiated, temperature-terminated. Saves energy consumption and provides shortest possible defrost cycle.

Bottom mounted units feature:

- ▶ "No stoop" lower shelf.
- ▶ Storage on top of cabinet.
- ▶ Compressor performs in coolest, most grease free area of kitchen.
- ▶ Easily accessible condenser coil for cleaning.

ROUGH-IN DATA

Specifications subject to change without notice.
 Chart dimensions rounded up to the nearest 1/8" (millimeters rounded up to next whole number).

Model	Doors	Shelves	Cabinet Dimensions (inches) (mm)			HP	Voltage	Amps	NEMA Config.	Cord Length (total ft.) (total m)	Crated Weight (lbs.) (kg)
			L	D	H*						
T-23F	1	3	27 686	29½ 750	78¾ 1991	⅓ ½	115/60/1 230-240/50/1	7.2 5.5	5-15P ▲	9 2.74	275 125

* Height does not include 5" (127 mm) for castors or 6" (153 mm) for optional legs.

▲ Plug type varies by country.

 True Refrigeration MADE IN U.S.A. SINCE 1945	 5 YEAR COMPRESSOR WARRANTY USA	 ENERGY STAR	 UL US	 NSF	 CE	APPROVALS:	AVAILABLE AT:
2/11 Printed in U.S.A.							

Model:
T-23F

T-Series:
Reach-In Solid Swing Door -10°F Freezer



STANDARD FEATURES

DESIGN

- True's commitment to using the highest quality materials and oversized refrigeration systems provides the user with colder product temperatures, lower utility costs, exceptional food safety and the best value in today's food service marketplace.

REFRIGERATION SYSTEM

- Factory engineered, self-contained, capillary tube system using environmentally friendly (CFC free) R404A refrigerant.
- Extra large evaporator coil balanced with higher horsepower compressor and large condenser; maintains -10°F (-23.3°C). Ideally suited for both frozen foods and ice cream.
- Sealed, cast iron, self-lubricating evaporator fan motor(s) and larger fan blades give True reach-in's a more efficient low velocity, high volume airflow design. This unique design ensures faster temperature recovery and shorter run times in the busiest of food service environments.
- Bottom mounted condensing unit positioned for easy cleaning. Compressor runs in coolest and most grease free area of the kitchen. Allows for storage area on top of unit.
- Automatic defrost system time-initiated, temperature-terminated. Saves energy consumption and provides shortest possible defrost cycle.

CABINET CONSTRUCTION

- Exterior - Stainless steel front. Anodized quality aluminum ends, back and top.
- Interior - attractive, NSF approved, white aluminum liner. Stainless steel floor with coved corners.

- Insulation - entire cabinet structure and solid door are foamed-in-place using Ecomate. A high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP).
- Welded, heavy duty steel frame rail, black powder coated for corrosion protection.
- Frame rail fitted with 4" (102 mm) diameter stem castors - locks provided on front set.

DOOR

- Stainless steel exterior with white aluminum liner to match cabinet interior. Door extend full width of cabinet shell. Door lock standard.
- Lifetime guaranteed recessed door handle. Door fitted with 12" (305 mm) long recessed handle that is foamed-in-place with a sheet metal interlock to ensure permanent attachment.
- Positive seal self-closing door. Lifetime guaranteed door hinges and torsion type closure system.
- Magnetic door gasket of one piece construction, removable without tools for ease of cleaning.

SHELVING

- Three (3) adjustable, heavy duty PVC coated wire shelves 22 7/8" L x 23 1/4" D (582 mm x 591 mm). Four (4) chrome plated shelf clips included per shelf.
- Shelf support pilasters made of same material as cabinet interior; shelves are adjustable on 1/2" (13 mm) increments.

LIGHTING

- Incandescent interior lighting - safety shielded. Lights activated by rocker switch mounted above door.

MODEL FEATURES

- Exterior temperature display.
- Evaporator is epoxy coated to eliminate the potential of corrosion.
- Rear airflow guards prevent product from blocking optimal airflow.
- NSF-7 compliant for open food product.

ELECTRICAL

- Unit completely pre-wired at factory and ready for final connection to a 115/60/1 phase, 15 amp dedicated outlet. Cord and plug set included.



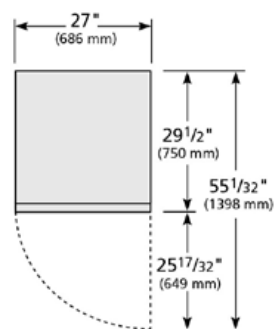
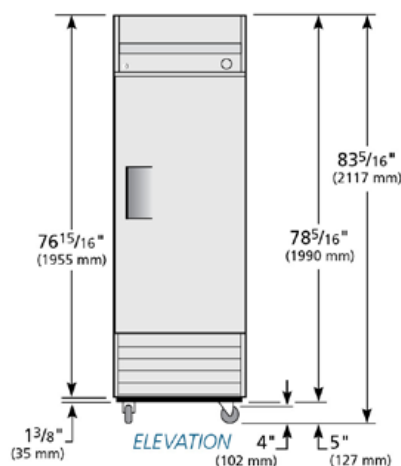
115/60/1
NEMA-5-15R

OPTIONAL FEATURES/ACCESSORIES

Upcharge and lead times may apply.

- ☐ 230 - 240V / 50 Hz.
- ☐ 6" (153 mm) standard legs.
- ☐ 6" (153 mm) seismic/flanged legs.
- ☐ Alternate door hinging (factory installed).
- ☐ Novelty baskets.
- ☐ Additional shelves.
- ☐ Half door bun tray racks. Each holds up to eleven 18" L x 26" D (458 mm x 661 mm) sheet pans (sold separately) (airflow guards need to be removed).
- ☐ Full door bun tray rack. Holds up to twenty-two 18" L x 26" D (458 mm x 661 mm) sheet pans (sold separately) (airflow guards need to be removed).
- ☐ Remote cabinets (condensing unit supplied by others; system comes standard with 404A expansion valve and requires R404A refrigerant). Consult factory technical service department for BTU information. All remote units must be hard wired during installation.

PLAN VIEW



PLAN VIEW

WARRANTY

One year warranty on all parts and labor and an additional 4 year warranty on compressor. (U.S.A. only)

METRIC DIMENSIONS ROUNDED UP TO THE NEAREST WHOLE MILLIMETER

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE



Model	Elevation	Right	Plan	3D	Back
T-23F	TFEY53E	TFEY03S	TFEY03P	TFEY633	

TRUE FOOD SERVICE EQUIPMENT

2001 East Terra Lane • O'Fallon, Missouri 63366 • (636)240-2400 • Fax (636)272-2408 • (800)325-6152 • Intl. Fax# (001)636-272-7546 • www.truemfg.com



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 16 - REFRIGERATOR, REACH-IN (1 REQ'D)

True Food Service Equipment T-49

Refrigerator, Reach-in, two-section, (6) shelves, stainless steel front & exterior, aluminum ends, white aluminum interior with stainless steel floor, (2) stainless steel full doors with locks, dial thermometer, 4" castors, 1/2 HP, 115v/60/1-ph, NEMA 5-15P, 9.1 amps, ENERGY STAR®, MADE IN USA

ACCESSORIES

Mfr	Qty	Model	Spec
True Food Service Equipment	1		Self-contained refrigeration standard
True Food Service Equipment	1		4" Swivel castors, standard (adds 5" to OA height)
True Food Service Equipment	1		Warranty - 5 year compressor (self-contained only), please visit www.truemfg.com for specifics
True Food Service Equipment	1		Warranty - 1 year parts and labor, please visit www.truemfg.com for specifics
True Food Service Equipment	1		Left door hinged left, right door hinged right standard


**TRUE FOOD SERVICE
EQUIPMENT, INC.**

2001 East Terra Lane • O'Fallon, Missouri 63366
(636)240-2400 • Fax (636)272-2408 • (800)325-6152 • Intl Fax# (001)636-272-7546
Parts Dept. (800)424-TRUE • Parts Dept. Fax# (636)272-9471 • www.truemfg.com

Project Name: _____

Location: _____

Item #: _____ **Qty:** _____

Model #: _____

A/A #
SIS #
Model:
T-49
T-Series:
Reach-In Solid Swing Door Refrigerator

T-49

- ▶ True's solid door reach-in's are designed with enduring quality that protects your long term investment.
- ▶ Designed using the highest quality materials and components to provide the user with colder product temperatures, lower utility costs, exceptional food safety and the best value in today's food service marketplace.
- ▶ Oversized, factory balanced, refrigeration system holds 33°F to 38°F (.5°C to 3.3°C) for the best in food preservation.
- ▶ Stainless steel solid doors and front. The finest stainless available with higher tensile strength for fewer dents and scratches.
- ▶ Adjustable, heavy duty PVC coated shelves.
- ▶ Positive seal self-closing doors. Lifetime guaranteed door hinges and torsion type closure system.

Bottom mounted units feature:

- ▶ "No stoop" lower shelf.
- ▶ Storage on top of cabinet.
- ▶ Compressor performs in coolest, most grease free area of kitchen.
- ▶ Easily accessible condenser coil for cleaning.

ROUGH-IN DATA

Specifications subject to change without notice.
Chart dimensions rounded up to the nearest 1/8" (millimeters rounded up to next whole number).

Model	Doors	Shelves	Cabinet Dimensions (inches) (mm)			HP	Voltage	Amps	NEMA Config.	Cord Length (total ft.) (total m)	Crated Weight (lbs.) (kg)
			L	D	H*						
T-49	2	6	54 1/8 1375	29 1/2 750	78 3/8 1991	1/2 1/2	115/60/1 230-240/50/1	9.1 5.4	5-15P ▲	9 2.74	420 191

* Height does not include 5" (127 mm) for castors or 6" (153 mm) for optional legs.

▲ Plug type varies by country.

	APPROVALS:
1/11 Printed in U.S.A.	AVAILABLE AT:

Model:

T-49**T-Series:***Reach-In Solid Swing Door Refrigerator***STANDARD FEATURES****DESIGN**

- True's commitment to using the highest quality materials and over sized refrigeration systems provides the user with colder product temperatures, lower utility costs, exceptional food safety and the best value in today's food service marketplace.

REFRIGERATION SYSTEM

- Factory engineered, self-contained, capillary tube system using environmentally friendly (CFC free) 134A refrigerant.
- Extra large evaporator coil balanced with higher horsepower compressor and large condenser; maintains 33°F to 38°F (.5°C to 3.3°C) for the best in food preservation.
- Sealed, cast iron, self-lubricating evaporator fan motor(s) and larger fan blades give True reach-in's a more efficient low velocity, high volume airflow design. This unique design ensures faster temperature recovery and shorter run times in the busiest of food service environments.
- Bottom mounted condensing unit positioned for easy maintenance. Compressor runs in coolest and most grease free area of the kitchen. Allows for storage area on top of unit.

CABINET CONSTRUCTION

- Exterior - Stainless steel front. Anodized quality aluminum ends, back and top.
- Interior - attractive, NSF approved, white aluminum liner. Stainless steel floor with coved corners.
- Insulation - entire cabinet structure and solid doors are foamed-in-place using Ecomate. A high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP).

- Welded, heavy duty steel frame rail, black powder coated for corrosion protection.
- Frame rail fitted with 4" (102 mm) diameter stem castors - locks provided on front set.

DOORS

- Stainless steel exterior with white aluminum liners to match cabinet interior. Doors extend full width of cabinet shell. Door locks standard.
- Lifetime guaranteed recessed door handles. Each door fitted with 12" (305 mm) long recessed handle that is foamed-in-place with a sheet metal interlock to ensure permanent attachment.
- Positive seal self-closing doors. Lifetime guaranteed door hinges and torsion type closure system.
- Magnetic door gaskets of one piece construction, removable without tools for ease of cleaning.

SHELVING

- Six (6) adjustable, heavy duty PVC coated wire shelves 24 ⁵/₁₆" L x 22 ³/₈" D (624 mm x 569 mm). Four (4) chrome plated shelf clips included per shelf.
- Shelf support pilasters made of same material as cabinet interior; shelves are adjustable on ¹/₂" (13 mm) increments.

LIGHTING

- Incandescent interior lighting - safety shielded. Lights activated by rocker switch mounted above doors.

MODEL FEATURES

- Exterior temperature display.
- Evaporator is epoxy coated to eliminate the potential of corrosion.
- NSF-7 compliant for open food product.

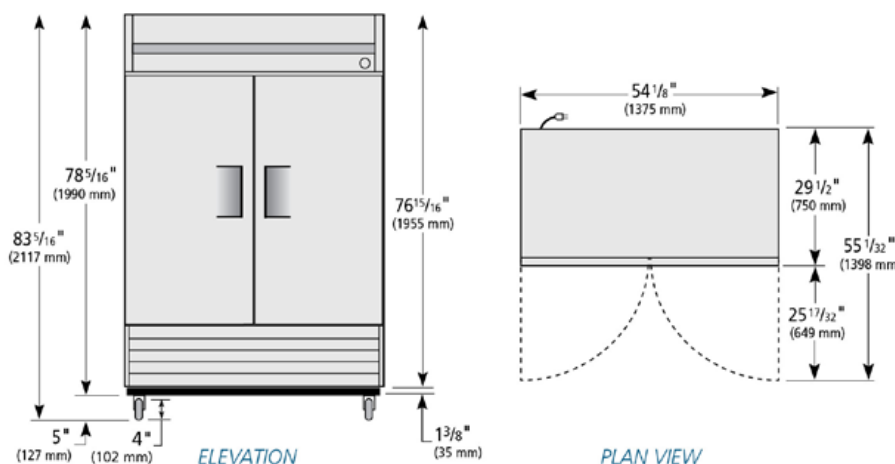
ELECTRICAL

- Unit completely pre-wired at factory and ready for final connection to a 115/60/1 phase, 15 amp dedicated outlet. Cord and plug set included.

115/60/1
NEMA-5-15R**OPTIONAL FEATURES/ACCESSORIES**

Upcharge and lead times may apply.

- ☐ 230 - 240V / 50 Hz.
- ☐ 6" (153 mm) standard legs.
- ☐ 6" (153 mm) seismic/flanged legs.
- ☐ Alternate door hinging (factory installed).
- ☐ Additional shelves.
- ☐ Half door bun tray racks. Each holds up to eleven 18"L x 26"D (458 mm x 661 mm) sheet pans (sold separately).
- ☐ Full door bun tray racks. Each holds up to twenty-two 18"L x 26"D (458 mm x 661 mm) sheet pans (sold separately).
- ☐ Remote cabinets (condensing unit supplied by others; system comes standard with 404A expansion valve and requires R404A refrigerant). Consult factory technical service department for BTU information. All remote units must be hard wired during installation.

PLAN VIEW**WARRANTY**

One year warranty on all parts and labor and an additional 4 year warranty on compressor. (U.S.A. only)

METRIC DIMENSIONS ROUNDED UP TO THE NEAREST WHOLE MILLIMETER

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE



Model	Elevation	Right	Plan	3D	Back
T-49	TFGY36E	TFEY03S	TFEY02P	TFGY363	

TRUE FOOD SERVICE EQUIPMENT

2001 East Terra Lane • O'Fallon, Missouri 63366 • (636)240-2400 • Fax (636)272-2408 • (800)325-6152 • Intl. Fax# (001)636-272-7546 • www.truemfg.com



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 17 - DISHTABLE ASSEMBLY, UNDERCOUNTER TYPE (1 REQ'D)

Advance Tabco DTU-U60-48L

Dishtable Assembly, 20" x 20" x 5" bowl, 48" L x 30" W table, undercounter type, stainless steel top, straight, left-to-right, 10-1/2" backsplash, 3" high rolled rims, stainless steel open frame pipe base, with side crossrails

ACCESSORIES

Mfr	Qty	Model	Spec
Advance Tabco	1	DTA-100	Pre-rinse Basket, with welded slide bar, 19-1/2" x 19-1/2"
T & S Brass	1	B-0133-08	EasyInstall Prerinse Unit, spring action gooseneck, 8" wall mount, JetSpray valve (1.48 gallons per minute)

**COMPACT - EFFICIENT - ECONOMICAL**

DTU-U60-48R Shown.
(Dishwasher by others)

STAINLESS STEEL DISHTABLE UNDERCOUNTER

Item #: _____ Qty #: _____

Model #: _____

Project #: _____

Model #	Length	Wt.
DTU-U60-48L	48"	80 lbs.
DTU-U60-48R	48"	80 lbs.
DTU-U60-72L	72"	115 lbs.
DTU-U60-72R	72"	115 lbs.

Left or Right designation is determined
by sink location.

FEATURES:

Tile edge for ease of installation.

Features a 5" deep bowl.

Table is furnished with 10-1/2" splash with a 2" return.

Stainless Steel Legs Stainless Steel Legs with Welded Cross Bracing
with Stainless Steel Bullet Feet.

CONSTRUCTION:

All TIG welded.

Welded areas blended to match adjacent surfaces and to a satin finish.

Gussets welded to a stainless steel support channel.

MECHANICAL:

Faucet holes in SPLASH punched on 8" centers (Faucet not included).

Waste Drain included.

MATERIAL:

LEGS are 16 ga. 304 Stainless Steel.

TOP with bowl, drainboard, splash and rolled rims are fabricated using
16 gauge stainless steel type "304" series.

**Optional
Basket with Welded
Slide Bar**



DTA-100

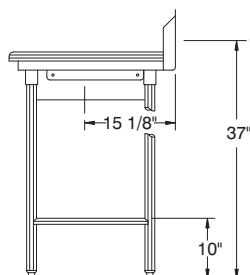
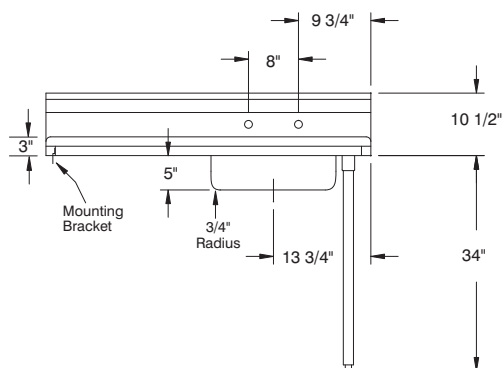
20" x 20"

ACCESSORIES	Model #
Faucet	
Prerinse Basket	

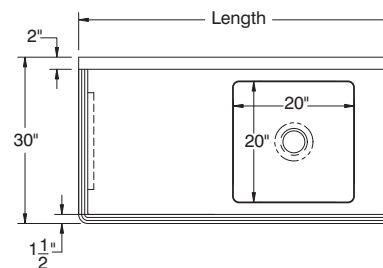
DIMENSIONS and SPECIFICATIONS

TOL ± .500"

ALL DIMENSIONS ARE TYPICAL



Right Undercounter Dishtable Shown



Customer Service Available To Assist You 1-800-645-3166 8:30 am - 8:00 pm E.S.T.

Email Orders To: customer@advancetabco.com. For Smart Fabrication™ Quotes, Email To: smartfab@advancetabco.com or Fax To: 631-586-2933

NEW YORK
Fax: (631) 242-6900

GEORGIA
Fax: (770) 775-5625

TEXAS
Fax: (972) 932-4795

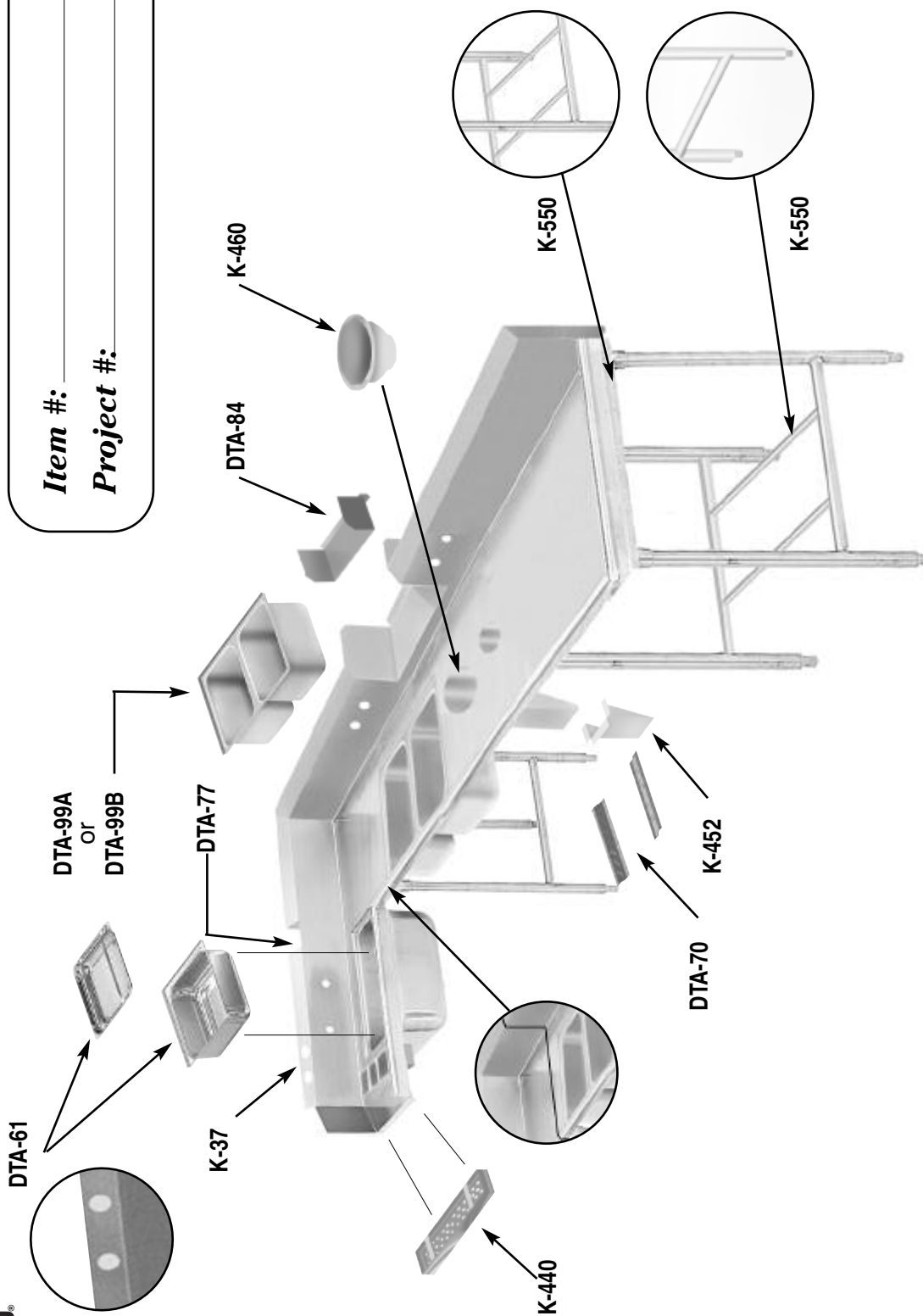
NEVADA
Fax: (775) 972-1578

SMART DISHTABLE MODIFICATIONS NSF



Item #: _____

Project #: _____



ADVANCE TABCO
SMART FABRICATION™
www.advancetabco.com

Customer Service Available To Assist You 1-800-645-3166 8:30 am - 8:00 pm E.S.T.
Email Orders To: customer@advancetabco.com. For Smart Fabrication™ Quotes, Email To: smartfab@advancetabco.com or Fax To: 631-586-2933

NEW YORK Fax: (631) 242-6900	GEORGIA Fax: (770) 775-5625	TEXAS Fax: (972) 932-4795	NEVADA Fax: (775) 972-1578

SMART DISHTABLE MODIFICATIONS & ACCESSORIES

SMART MODIFICATIONS

<u>QTY.</u>		<u>QTY.</u>	
_____ K-23	Welded Set-Up/Crated	_____ DTA-46	Inside Mitered Corner
_____ K-24	Shell Crating	_____ DTA-55	Column Notch (Includes Splash)
_____ K-37	Anti-siphon Vacuum Breaker Hole	_____ DTA-56	Additional Length on 59" side of Korner or Straight Tables
_____ K-57	Welded field Joint (Welded in field by others)	_____ DTA-61	Deep Drawn Prerinse Sink Assembly - 20" x 20" x 8" Stainless Steel Sink Bowl Removable. Perforated Stainless Steel Basket with Slide Bar and includes Basket Type Drain. (Available as Upgrade on Standard and SuperSaver Soil Tables only)
_____ K-77	Splash Cut-Out (Pipe Chase)	_____ DTA-66	Provision for Dishlanding on Straight Soil Table (Min 4")
_____ K-440	Waste Trough Installation welded into table and furnished with a 2" deep removable basket	_____ DTA-70	Install Booster Heater Brackets (Brackets By Others)
_____ K-452	Control Bracket 8 x 12	_____ DTA-72	Provision for Side Loader
_____ K-453	Control Bracket 14 x 16	_____ DTA-75	Provision for Limit Switch (Limit Switch By Others)
_____ K-454	Side Splash	_____ DTA-76	Move Prerinse Sink To Conform To Dishmachine Requirements. Please Specify Machine When Placing order
_____ K-456	Scrap Block installed (Includes Rubber Scrap Block)	_____ DTA-77	Modify Machine Opening To 22" To Conform To Dishmachine Requirements. Please Specify Machine When Placing order
_____ K-460	Disposal Cone welded into table and furnished with 6 x 9 Control Bracket & Faucet Holes (Supplied by others)	_____ DTA-78	Notch in Backsplash Return To Clear Handle Please Specify Machine When Placing Order.
_____ K-461	Disposal Collar welded into sink bowl and furnished with 6 x 9 control bracket (Supplied by others)	_____ DTA-84	Simple Pass-Thru (Specify wall thickness - minimum length 36")
_____ K-472	Special Faucet Hole location	_____ DTA-99A	16" x 20" x 12" Deep Drawn Sink Bowls
_____ K-495	Turn Down Backsplash	_____ DTA-99B	20" x 20" x 12" Deep Drawn Sink Bowls
_____ K-508	Special Size or Modification	_____ DTA-99C	10" x 14" x 5" Dump Sink
_____ DTA-40	Drain Hole (For sorting Table)		
_____ DTA-45	Scrap Trough welded to dump sink. Maximum scrap trough length is 5 feet. (for 20" x 20" x 8" bowl Spec-line soil S30 series only) (Consult factory for trough lengths exceeding 5 feet.)		

ACCESSORIES

<u>QTY.</u>		<u>QTY.</u>	
_____ K-4	Lever Drain Bracket	_____ DTA-53	SPEC-LINE Heavy Duty Prerinse Faucet
_____ K-397	Wall Bracket (Requires K-495)	_____ DTA-60	Prerinse Basket for Dishtables
_____ K-455C	Stainless Steel Sink Cover 16"x20"	_____ DTA-62	Prerinse Basket with Slide Bar for Deep Drawn Bowls (20"x20")
_____ K-455E	Stainless Steel Sink Cover 20"x20"	_____ DTA-63	Prerinse Slide Bar for Deep Drawn Bowls (20"x20")
_____ K-475	S/S Leg with Stainless Steel Bullet Foot	_____ DTA-65	Prerinse Slide Bar for Deep Drawn Bowls (16"x20")
_____ K-478	Stainless Steel Bullet Foot	_____ DTA-67	Stainless Steel Rear Cross-Bracing (Factory Installed Only)
_____ K-488	Flanged S/S Bullet Foot	_____ DTA-69	Prerinse Basket with Slide Bar (16"x20")
_____ K-494	S/S Welded Leg Assembly with S/S Feet	_____ DTA-81	S/S Welded Leg Assembly with S/S Feet
_____ K-550	Stainless Steel Tubular Rack Storage		





ADDITIONAL DISHTABLE ACCESSORIES

For More Faucet Options & Faucet Specs,
See Faucet Specifications in **Section G**

Prerinse Basket with Welded Slide Bar

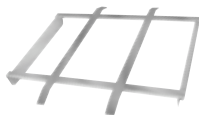
DTA-100 19-1/2" x 19-1/2"



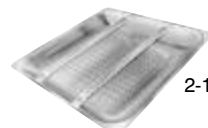
4" Depth

Prerinse Slide Bar

DTA-60 19-1/2" x 19-1/2"



Prerinse Baskets & Welded Slide Bars For Use with 3 Compartment Dishtables, Deep Drawn Bowls, DTA-99A & DTA-99B Modifications

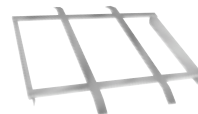


2-1/4" Depth

Prerinse Baskets

DTA-62 20" x 20"

DTA-69 16" x 20"



Prerinse Slide Bars

DTA-63 20" x 20"

DTA-65 16" x 20"

K-117



Add-A-Faucet

12" Spout

Welded Leg Assembly

K-494

Stainless Steel Legs.
Metal Bullet Feet.



Splash Mounted Faucet EXTRA HEAVY DUTY

K-119
8" O.C.

16" Spout



Splash Mounted Faucet

K-101
8" O.C.

8" Spout



SPEC-LINE EXTRA HEAVY DUTY

Prerinse Faucet

DTA-53
8" O.C.

Wall
Bracket
Included

Splash
Mtd.

Interchangeable with
T&S Brand Faucets
T&S Equivalent = B133-B



Prerinse Faucet



K-116
8" O.C.

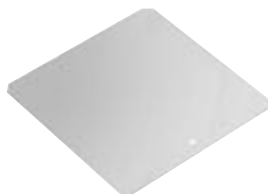
Wall
Bracket
Included

Splash
Mtd.



Stainless Steel Sink Compartment Covers

K-455
16" x 20" Cover
or
20" x 20"
Specify Size

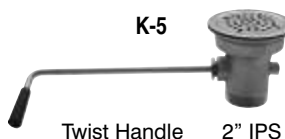


Accessories Not Illustrated

DTA-64 Replacement Rubber Scrap Block
DTA-75 Metal Bullet Feet.
K-478 Stainless Steel Bullet Feet.

Lever Operated Drain

K-5



Twist Handle 2" IPS

Lever Drain Support Bracket

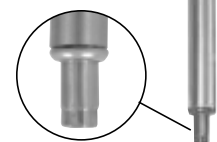
K-4



See Section G for more Lever Drains
and specifications

INDIVIDUAL
Stainless
Steel Legs
with
Stainless Steel
Adjustable
Bullet Feet

K-475



Customer Service Available To Assist You **1-800-645-3166** 8:30 am - 8:00 pm E.S.T.

Email Orders To: customer@advancetabco.com. For Smart Fabrication™ Quotes, Email To: smartfab@advancetabco.com or Fax To: 631-586-2933

NEW YORK

Fax: (631) 242-6900

GEORGIA

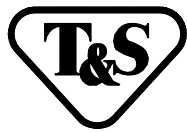
Fax: (770) 775-5625

TEXAS

Fax: (972) 932-4795

NEVADA

Fax: (775) 972-1578


T&S BRASS AND BRONZE WORKS, INC.

2 SADDLEBACK COVE / P.O. BOX 1088 / TRAVELERS REST, SC 29690

PHONE 800-476-4103 - FAX 864- 834-3518



Model No.

B-0133-08

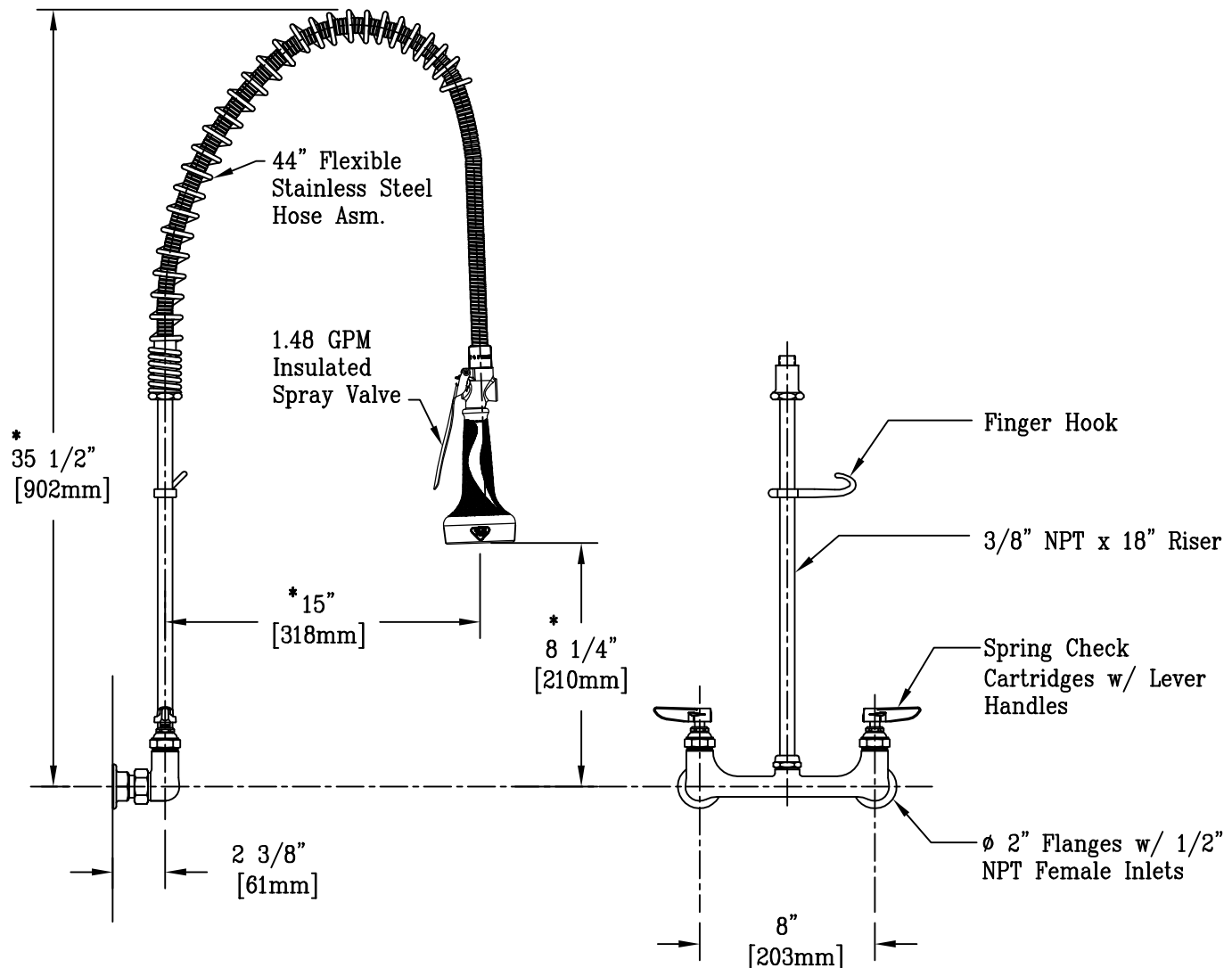
**RELIABILITY
BUILT IN**

Job Name:

Architect/Engineer Approval:

Notes:

EPAct2005 COMPLIANT



SIDE VIEW

FRONT VIEW

 * Dimensions May Vary $\pm 1/2"$ on Each Installation

Product Description:

 8" Wall Mount Mixing Fct. w/ 1/2" NPT Female Inlets,
 18" Riser, Finger Hook, Spring Check Cartridges,
 44" Flexible Stainless Steel Hose & 1.48 GPM Spray Valve

Drawn:

WJS

Checked

JRM

Scale:

1 : 8

Approved

JHB

Date:

05/18/06



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 18 - DISHWASHER, UNDERCOUNTER (1 REQ'D)

Insinger RL-30

Undercounter Dishwasher, 3.5kw built-in booster, approximately 30 racks/hour cap., auto fill, 2.8kw tank heater, pumped drain, continuous wash cycle, (1) plate & (1) flat rack, s/s interior & exterior, ENERGY STAR®

ACCESSORIES

Mfr	Qty	Model	Spec
Insinger	1		SureFire start-up and check-out service, standard
Insinger	1		208-240/60/1-ph, 18-20 amps



Project _____ CSI - 11400 _____
 Item _____ Approval _____
 Quantity _____ Date _____

RL-30

Automatic Undercounter Dishwasher

- Automatic, hot water sanitizing undercounter dishwasher with timed wash and rinse cycle. Fully automatic operation with power on/off button.
- Capacity is 30 racks per hour or 750 dishes per hour.
- .79 gallons per rack final rinse consumption
- Energy efficient
- Only requires a 30 amp circuit
- TempGuard™ final rinse temperature control ensures sanitized ware



Superior cleaning action with 7 bayonet style wash arms with 42 fixed wash jets.

STANDARD FEATURES

- 7 bayonet style wash arms with 42 fixed wash jets
- 6 upper rinse jets
- 8 lower revolving rinse jets
- Fully automatic operation
- Independent wash and rinse systems
- Automatic tank fill
- Continuous wash cycle
- Electric immersion tank heat: 2.8 kW
- Low water protection for heater
- TempGuard™ final rinse temperature control
- Thermostatic controls for the wash tank and final rinse heaters
- Built-in electric booster: 3.5 kW (70 rise)
- Only requires a 30 amp circuit
- Motor overload protection
- Double wall construction for noise reduction and thermal insulation
- Deep drawn side walls, wash tank, door and rack guides for easy cleaning
- Door interlock safety switch
- Flexible water connection
- Single point electrical connection for motor, controls, heater and booster
- Built-in detergent and rinse-aid pumps
- Pumped drain
- Food soil strainer system
- Pressure reduction valve and line strainer
- 2 plastic 20" x 20" racks (1 plate, 1 silver)

OPTIONS

- ☐ Additional plastic 20" x 20" rack
- ☐ Drain quench system
- ☐ 6" stand
- ☐ 17" stand

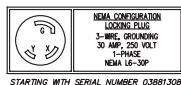




RL-30

Automatic Undercounter Dishwasher

INSTALLATION CONNECTIONS

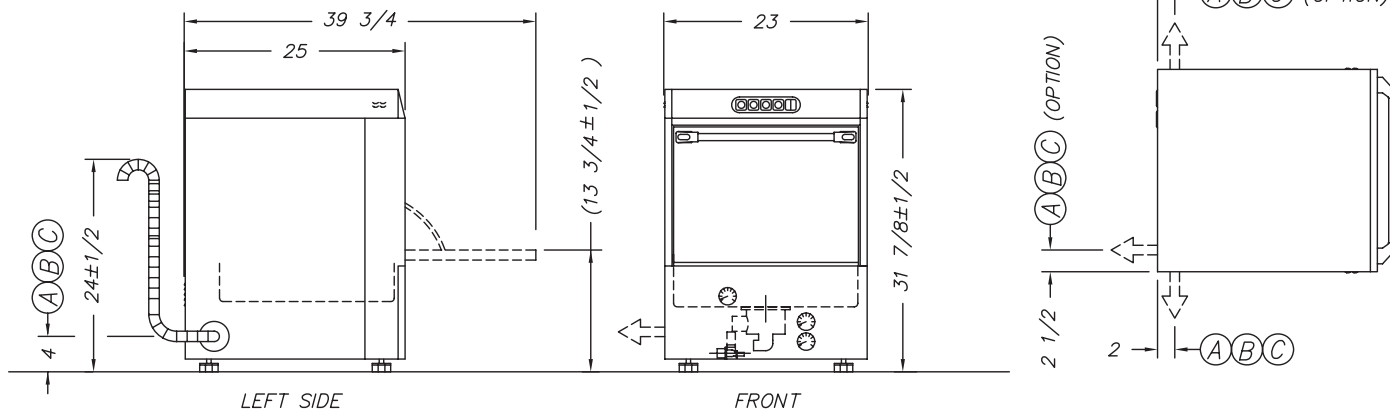


INSTALLATION CONNECTIONS		
LTR	DESCRIPTION	SIZE
A	HOT WATER SUPPLY – 110° F MIN / 140° F MAX.	3/4" FPT x 3.5 FT LG. FLEX HOSE
B	ELECT: 1.0 HP + 4.7 KW, 18 FLA ON 208/1/60 1.0 HP + 5.2 KW, 20 FLA ON 220-240/1/60	10-3C x 8 FT LG SJ CABLE WITH NEMA L6-30P
C	DRAIN CONNECTION (SEE NOTE 2). 24" MAX HEIGHT	3/4" x 4 FT LG. FLEX HOSE

NOTES:

1. CABLE WITH NEMA L6-30P PLUG IS PROVIDED
2. DRAIN HOSE END HAS 3/4" ID BY 1" DEEP FLEXIBLE RUBBER CUFF.
3. WASH TANK CAPACITY 4.75 GAL.
4. FINAL RINSE CONSUMPTION 0.79 GAL/CYCLE.
5. CLEARANCE BETWEEN RACK AND UPPER WASH/RINSE ARM IS 11-3/4".

TOP VIEW



Note: For all rough in connections see installation and layout detail drawing.

Capacity Per Hour	30 racks 750 dishes 68 meals
Tank Capacity	7.4 gallons
Motor Size	1hp (wash)
Electric Usage	2.8 kW wash tank 3.5 kW built-in booster (40°-70° rise)
Water Inlet Temperature	110°F to 140°F
Final Rinse Peak Flow at 20 psi min.	4.75 gallons/minute
Final Rinse Consumption at 20 psi min.	23.8 gallons/hour 0.79 gallons/rack
Exhaust Hood Requirement	None
Time Cycle	120 seconds
Peak Rate Drain Flow	9 gallons/minute
Shipping Weight	165 lbs.
Current Draw Amps	Electric with Built-in Booster
208-240/1/60	18-20

SPECIFICATIONS

CONSTRUCTION- Machine wash tank, casing and rinse pipes are made of 304 stainless steel. The polypropylene wash manifold, arms and jets are heat , alkali and rust resistant.

CONTROLS- Front mounted controls are easy to read with indicator lights for power heat and drain. Control components mounted in splash-proof box. Box is on slides for easy service.

WASH/RINSE SYSTEM- 42 fixed high volume spray nozzles, 14 full coverage rinse nozzles.

DRAIN SYSTEM- Separate drain pump lifts up to 24 inches above floor level.

INTERNAL HEIGHT- 11 1/2" inches.

Note: Due to product improvement we reserve the right to change information and specifications without notice.

AUTOQUOTES





Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 19 - SINK, THREE (3) COMPARTMENT (1 REQ'D)

Advance Tabco FC-3-1818-18L-X

Fabricated NSF Sink, 3 compartment, 18" left drainboard, bowl size 18" x 18" x 14" deep, 16/304 s/s, tile edge splash, rolled edge, faucet holes on 8" centers, s/s legs, 1" adjustable s/s bullet feet, NSF, overall 24" F/B x 75" L/R

ACCESSORIES

Mfr	Qty	Model	Spec
Advance Tabco	3	K-5-X	Drain, twist operated, 2" NPT and 1-1/2" IPS outlet connections
Advance Tabco	3	K-4-X	Support Bracket, for lever drains on sinks



STAINLESS STEEL

FC Series - 16 Gauge Fabricated Sinks



K-700
Removable
Side Splashes
Fits Left OR Right Side

FEATURES:

Backsplash has tile edge for ease of installation.
Sink bowls are 3/4" coved corner and meet NSF requirements.
Rolled Rim Edge for additional strength.
Sink Bowls are 14" deep for greater capacity.
NOTE: 15" x 15" bowls are 12" deep.

CONSTRUCTION:

All TIG welded.
Welded areas blended to match adjacent surfaces and to a satin finish.
Gussets welded to a die-embossed reinforced plate.

MATERIAL:

1 5/8" diameter stainless steel legs.
Stainless steel legs with 1" adjustable stainless steel bullet feet.
Entire unit is 16 gauge 304 stainless steel.
Gussets - stainless steel.

MECHANICAL:

- Supply is 1/2" IPS hot & cold.
- Faucet holes on 8" centers.
- Faucets are not included (**see accessories**).
- Waste drains are 1 1/2" IPS S/S basket type, located in center of sink bowl, and are included.

Item #: _____ **Qty #:** _____

Model #: _____

Project #: _____

	MODEL #	BOWL SIZE	O.A. Length	# of Drbds.
ONE COMP	FC-1-1818	18x18	23"	0
	FC-1-1818-18RorL	18x18	38 1/2"	1
	FC-1-1818-18RL	18x18	54"	2
	FC-1-1818-24RorL	18x18	45"	1
	FC-1-1818-24RL	18x18	66"	2
	FC-1-2424	24x24	29"	0
TWO COMP	*FC-2-1515	15x15	35"	0
	FC-2-1818	18x18	41"	0
	FC-2-1818-18RL	18x18	72"	2
	FC-2-1818-24RL	18x18	84"	2
	FC-2-2424-18RorL	24x24	68 1/2"	1
	FC-2-2424-24RL	24x24	96"	2
THREE COMP	*FC-3-1515	15x15	50"	0
	*FC-3-1515-15RL	15x15	75"	2
	*FC-3-1620-18RL	16X20	84"	2
	FC-3-1818	18x18	59"	0
	FC-3-1818-18RorL	18x18	75"	1
	FC-3-1818-18RL	18x18	90"	2
	FC-3-1818-24RL	18x18	102"	2
	FC-3-1824-18RorL	18x24	74 1/2"	1
	FC-3-1824-18RL	18x24	90"	2
	FC-3-1824-24RL	18x24	102"	2
	FC-3-2030-20RL	20x30	100"	2
	†FC-3-2424-24RorL	24x24	98 1/2"	1
FOUR COMP	†FC-3-2424-24RL	24x24	120"	2
	*†FC-4-2424-24RL	24x24	144"	2

*2 Sets of Faucet Holes

*Indicates 12" Deep Bowls

ACCESSORIES	Model #	Qty
DRAINS		
FAUCETS		



Customer Service Available To Assist You 1-800-645-3166 8:30 am - 8:00 pm E.S.T.

Email Orders To: customer@advancetabco.com. For Smart Fabrication™ Quotes, Email To: smartfab@advancetabco.com or Fax To: 631-586-2933

NEW YORK
Fax: (631) 242-6900

GEORGIA
Fax: (770) 775-5625

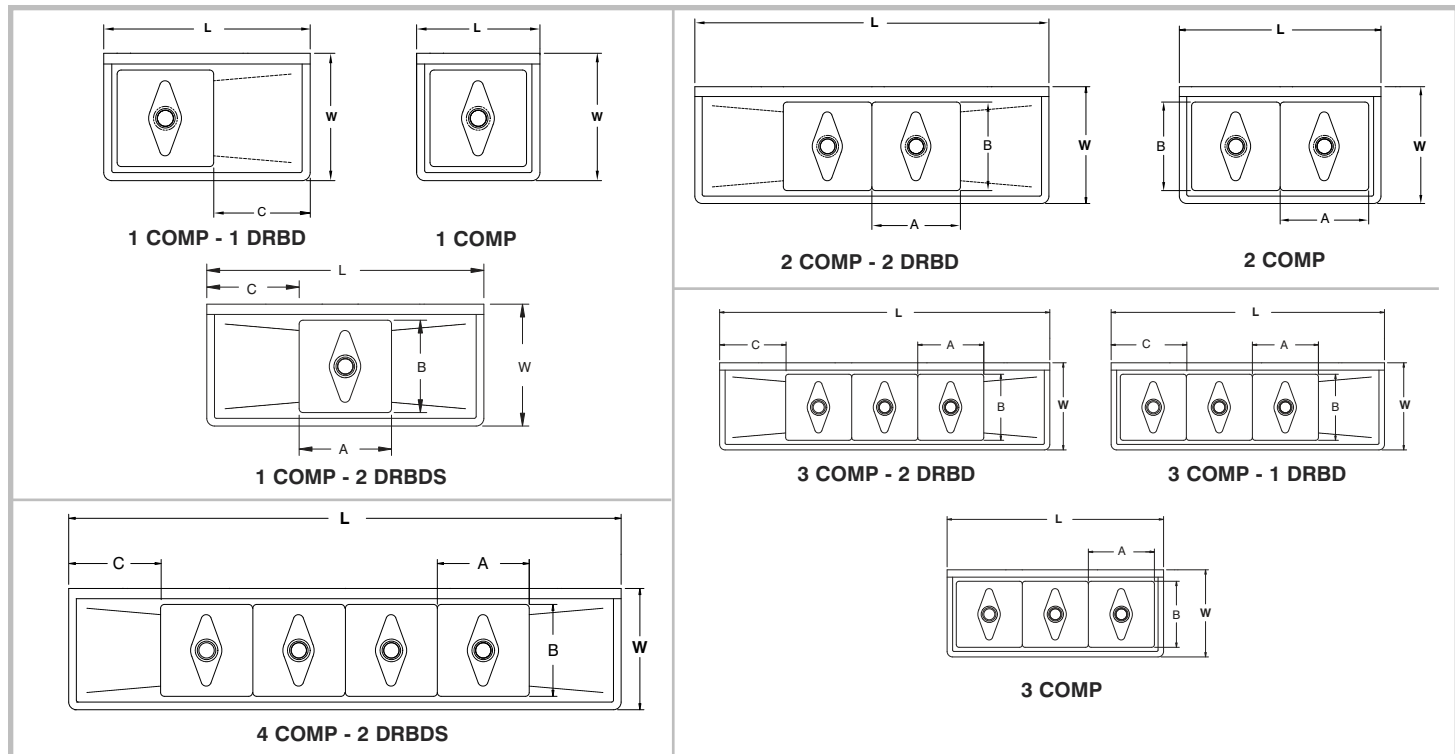
TEXAS
Fax: (972) 932-4795

NEVADA
Fax: (775) 972-1578

DIMENSIONS and SPECIFICATIONS

TOL Overall: $\pm .500$ " Interior: $\pm .250$ "

ALL DIMENSIONS ARE TYPICAL

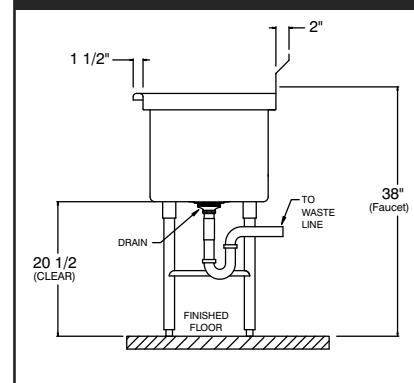


	MODEL #	Length L	Width W	Bowl Size A & B	Drbd. Length C	# of Drbrds.	Drbrd. Location	Wt
ONE COMP	FC-1-1818	23"	24"	18x18	N/A	0	None	50 lbs.
	FC-1-1818-18RorL	38 1/2"	24"		18"	1	Specify	65 lbs.
	FC-1-1818-18RL	54"	24"		18"	2	Both	85 lbs.
	FC-1-1818-24RorL	45"	24"		24"	1	Specify	70 lbs.
	FC-1-1818-24RL	66"	24"	24x24	24"	2	Both	100 lbs.
	FC-1-2424	29"	30"		N/A	0	None	73 lbs.
TWO COMP	*FC-2-1515	35"	21"	15x15	N/A	0	None	69 lbs.
	FC-2-1818	41"	24"	18x18	N/A	0	None	81 lbs.
	FC-2-1818-18RL	72"	24"		18"	2	Both	105 lbs.
	FC-2-1818-24RL	84"	24"		24"	2	Both	130 lbs.
	FC-2-2424-18RorL	68 1/2"	30"		18"	1	Specify	180 lbs.
	FC-2-2424-24RL	96"	30"	24x24	24"	2	Both	225 lbs.
THREE COMP	*FC-3-1515	50"	21"	15x15	N/A	0	None	92 lbs.
	*FC-3-1515-15RL	75"	21"		15"	2	Both	130 lbs.
	FC-3-1620-18RL	84"	26"	16x20	18"	2	Both	125 lbs.
	FC-3-1818	59"	24"	18x18	N/A	0	None	110 lbs.
	FC-3-1818-18RorL	75"	24"		18"	1	Specify	128 lbs.
	FC-3-1818-18RL	90"	24"		18"	2	Both	143 lbs.
	FC-3-1818-24RL	102"	24"		24"	2	Both	178 lbs.
	FC-3-1824-18RorL	74 1/2"	30"	18x24	18"	1	Specify	250 lbs.
	FC-3-1824-18RL	90"	30"		18"	2	Both	265 lbs.
	FC-3-1824-24RL	102"	30"		24"	2	Both	300 lbs.
	FC-3-2030-20RL	100"	36"	20x30	20"	2	Both	315 lbs.
	†FC-3-2424-24RorL	98 1/2"	30"	24x24	24"	1	Specify	330 lbs.
	†FC-3-2424-24RL	120"	30"		24"	2	Both	350 lbs.
FOUR COMP	†FC-4-2424-24RL	144"	30"	24x24	24"	2	Both	400 lbs.

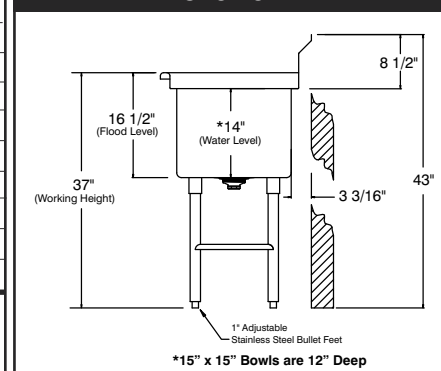
†2 Sets of Faucet Holes

*Indicates 12" Deep Bowls

PLUMBING ROUGH-IN



SECTION





SINK DRAINS & ACCESSORIES

Twist Handle Operated Drain



K-5

Twist Handle Operated Drain With Overflow



K-15

Lever Operated Drains For Hand Sinks



K-26

No Overflow



K-67

**SPEC-LINE Twist Handle Operated Drain
All Stainless Steel**



K-40

3-1/2" Basket Drain



K-6

Replacement Drain Basket For K-6



K-310

Twist Drain Support Bracket



K-4

Replacement Strainer For K-5 and K-15



K-410



Customer Service Available To Assist You 1-800-645-3166 8:30 am - 8:00 pm E.S.T.

Email Orders To: customer@advancetabco.com. For Smart Fabrication™ Quotes, Email To: smartfab@advancetabco.com or Fax To: 631-586-2933

NEW YORK

Fax: (631) 242-6900

GEORGIA

Fax: (770) 775-5625

TEXAS

Fax: (972) 932-4795

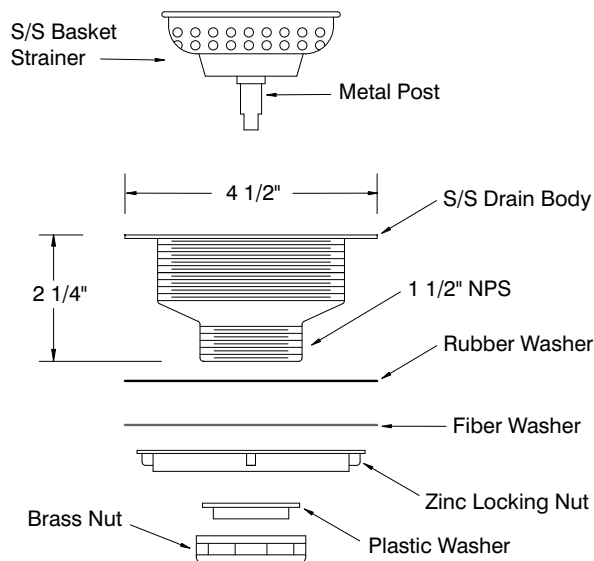
NEVADA

Fax: (775) 972-1578

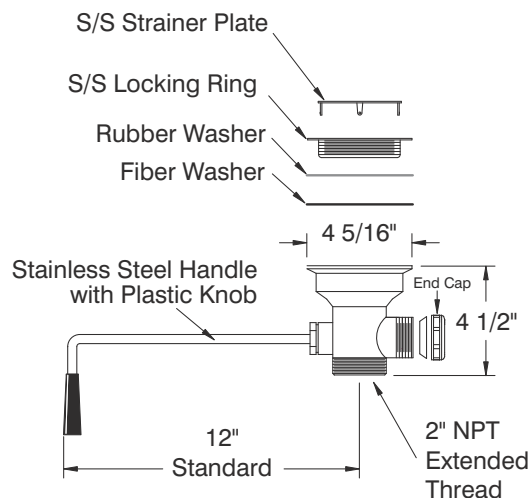
DIMENSIONS and SPECIFICATIONS

TOL $\pm .125"$

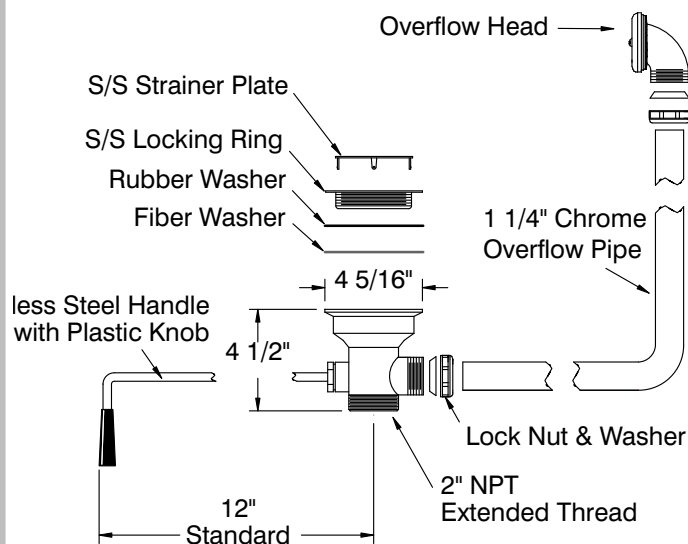
ALL DIMENSIONS ARE TYPICAL



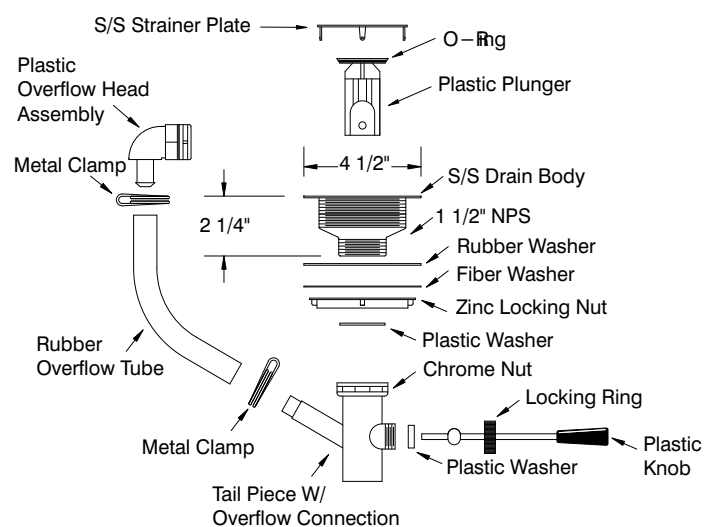
K-6



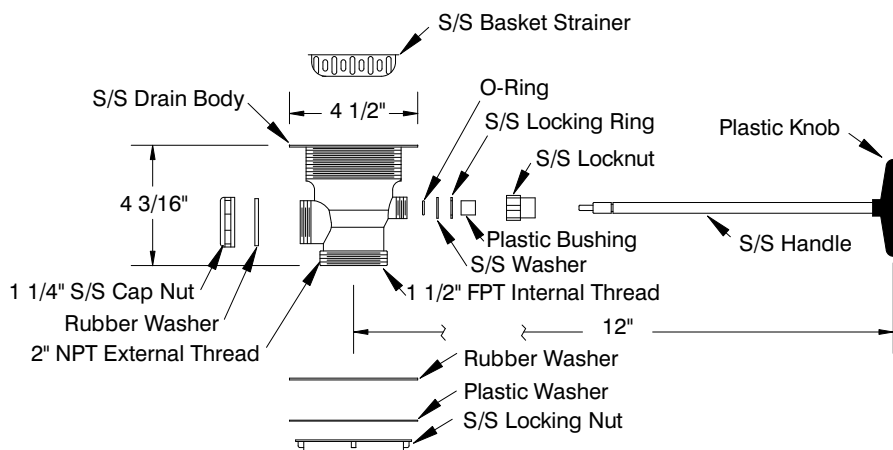
K-5



K-15



K-26 & K-67 For Hand Sinks (K-67 Excludes Overflow)



K-40

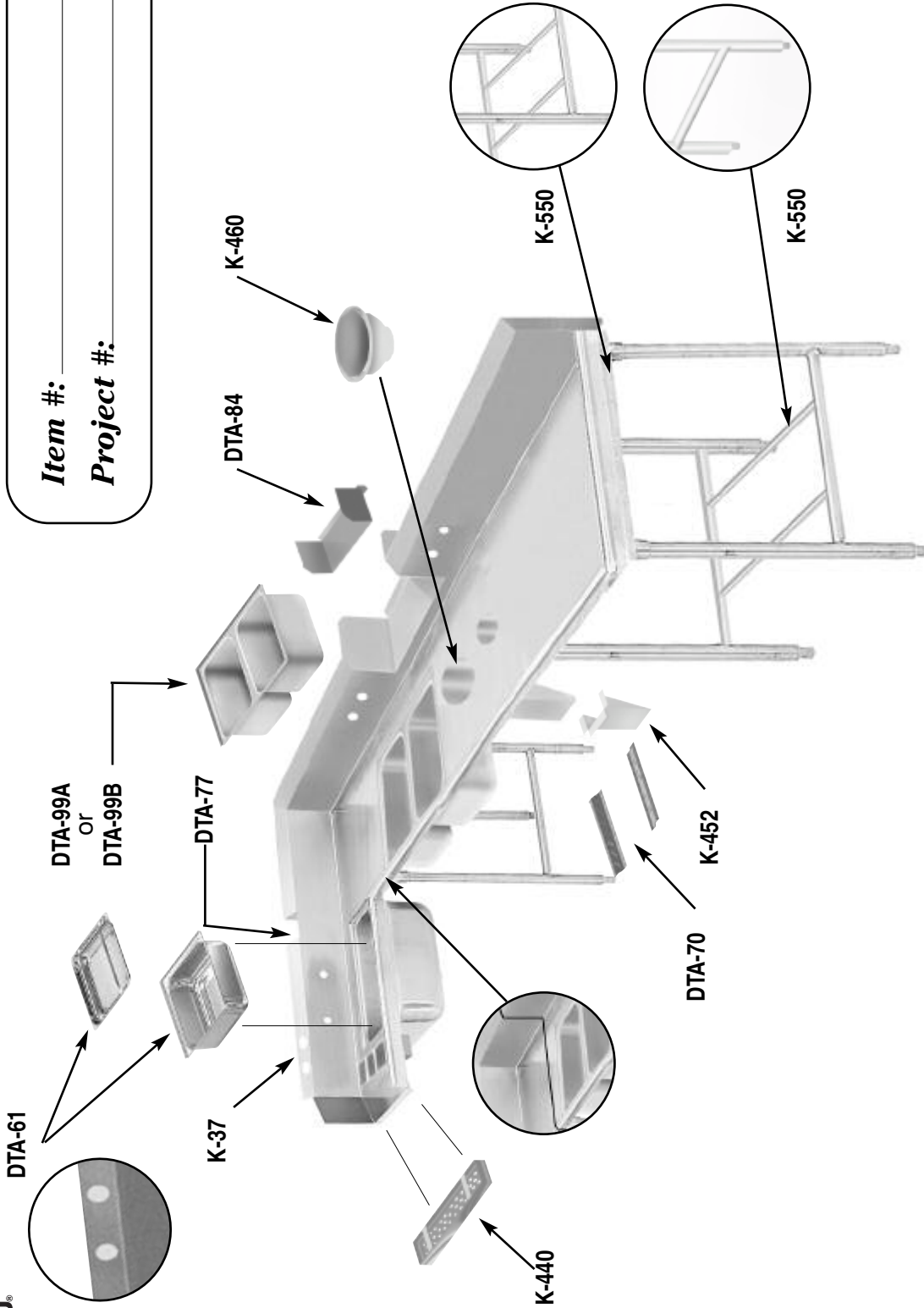


SMART DISHTABLE MODIFICATIONS NSF



Item #: _____

Project #: _____





ADVANCE TABCO®
SMART FABRICATION™
www.advancetabco.com

Customer Service Available To Assist You 1-800-645-3166 8:30 am - 8:00 pm E.S.T.
Email Orders To: customer@advancetabco.com. For Smart Fabrication™ Quotes, Email To: smartfab@advancetabco.com or Fax To: 631-586-2933

NEW YORK Fax: (631) 242-6900	GEORGIA Fax: (770) 775-5625	TEXAS Fax: (972) 932-4795	NEVADA Fax: (775) 972-1578

SMART DISHTABLE MODIFICATIONS & ACCESSORIES

SMART MODIFICATIONS

<u>QTY.</u>		<u>QTY.</u>	
_____ K-23	Welded Set-Up/Crated	_____ DTA-46	Inside Mitered Corner
_____ K-24	Shell Crating	_____ DTA-55	Column Notch (Includes Splash)
_____ K-37	Anti-siphon Vacuum Breaker Hole	_____ DTA-56	Additional Length on 59" side of Korner or Straight Tables
_____ K-57	Welded field Joint (Welded in field by others)	_____ DTA-61	Deep Drawn Prerinse Sink Assembly - 20" x 20" x 8" Stainless Steel Sink Bowl Removable. Perforated Stainless Steel Basket with Slide Bar and includes Basket Type Drain. (Available as Upgrade on Standard and SuperSaver Soil Tables only)
_____ K-77	Splash Cut-Out (Pipe Chase)	_____ DTA-66	Provision for Dishlanding on Straight Soil Table (Min 4")
_____ K-440	Waste Trough Installation welded into table and furnished with a 2" deep removable basket	_____ DTA-70	Install Booster Heater Brackets (Brackets By Others)
_____ K-452	Control Bracket 8 x 12	_____ DTA-72	Provision for Side Loader
_____ K-453	Control Bracket 14 x 16	_____ DTA-75	Provision for Limit Switch (Limit Switch By Others)
_____ K-454	Side Splash	_____ DTA-76	Move Prerinse Sink To Conform To Dishmachine Requirements. Please Specify Machine When Placing order (\$30 Models No Charge)
_____ K-456	Scrap Block installed (Includes Rubber Scrap Block)	_____ DTA-77	Modify Machine Opening To 22" To Conform To Dishmachine Requirements. Please Specify Machine When Placing order
_____ K-460	Disposal Cone welded into table and furnished with 6 x 9 Control Bracket & Faucet Holes (Supplied by others)	_____ DTA-78	Notch in Backsplash Return To Clear Handle Please Specify Machine When Placing Order.
_____ K-461	Disposal Collar welded into sink bowl and furnished with 6 x 9 control bracket (Supplied by others)	_____ DTA-84	Simple Pass-Thru (Specify wall thickness - minimum length 36")
_____ K-472	Special Faucet Hole location	_____ DTA-99A	16" x 20" x 12" Deep Drawn Sink Bowls
_____ K-495	Turn Down Backsplash	_____ DTA-99B	20" x 20" x 12" Deep Drawn Sink Bowls
_____ K-508	Special Size or Modification	_____ DTA-99C	10" x 14" x 5" Dump Sink
_____ DTA-40	Drain Hole (For sorting Table)		
_____ DTA-45	Scrap Trough welded to dump sink. Maximum scrap trough length is 5 feet. (for 20" x 20" x 8" bowl Spec-line soil S30 series only) (Consult factory for trough lengths exceeding 5 feet.)		

ACCESSORIES

<u>QTY.</u>		<u>QTY.</u>	
_____ K-4	Lever Drain Bracket	_____ DTA-53	SPEC-LINE Heavy Duty Prerinse Faucet
_____ K-397	Wall Bracket (Requires K-495)	_____ DTA-60	Prerinse Basket for Dishtables
_____ K-455C	Stainless Steel Sink Cover 16"x20"	_____ DTA-62	Prerinse Basket with Slide Bar for Deep Drawn Bowls (20"x20")
_____ K-455E	Stainless Steel Sink Cover 20"x20"	_____ DTA-63	Prerinse Slide Bar for Deep Drawn Bowls (20"x20")
_____ K-475	S/S Leg with Stainless Steel Bullet Foot	_____ DTA-65	Prerinse Slide Bar for Deep Drawn Bowls (16"x20")
_____ K-478	Stainless Steel Bullet Foot	_____ DTA-67	Stainless Steel Rear Cross-Bracing (Factory Installed Only)
_____ K-488	Flanged S/S Bullet Foot	_____ DTA-69	Prerinse Basket with Slide Bar (16"x20")
_____ K-494	S/S Welded Leg Assembly with S/S Feet	_____ DTA-81	S/S Welded Leg Assembly with S/S Feet
_____ K-550	Stainless Steel Tubular Rack Storage		





ADDITIONAL DISHTABLE ACCESSORIES

For More Faucet Options & Faucet Specs,
See Faucet Specifications in **Section G**

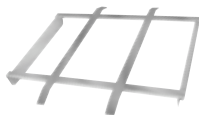
Prerinse Basket with Welded Slide Bar

DTA-100 19-1/2" x 19-1/2"

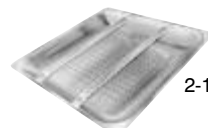


Prerinse Slide Bar

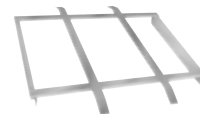
DTA-60 19-1/2" x 19-1/2"



Prerinse Baskets & Welded Slide Bars For Use with 3 Compartment Dishtables, Deep Drawn Bowls, DTA-99A & DTA-99B Modifications



2-1/4" Depth



Prerinse Baskets

DTA-62 20" x 20"

DTA-69 16" x 20"

Prerinse Slide Bars

DTA-63 20" x 20"

DTA-65 16" x 20"

K-117



Add-A-Faucet

12" Spout

Welded Leg Assembly

K-494

Stainless Steel Legs.
Metal Bullet Feet.



Splash Mounted Faucet EXTRA HEAVY DUTY

K-119
8" O.C.

16" Spout



Splash Mounted Faucet

K-101
8" O.C.

8" Spout



SPEC-LINE EXTRA HEAVY DUTY

Prerinse Faucet

DTA-53
8" O.C.

Wall
Bracket
Included

Splash
Mtd.

Interchangeable with
T&S Brand Faucets
T&S Equivalent = B133-B



Prerinse Faucet



K-116
8" O.C.

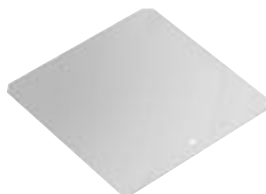
Wall
Bracket
Included

Splash
Mtd.



Stainless Steel Sink Compartment Covers

K-455
16" x 20" Cover
or
20" x 20"
Specify Size

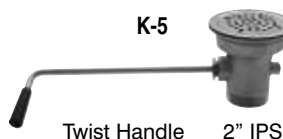


Accessories Not Illustrated

DTA-64 Replacement Rubber Scrap Block
DTA-75 Metal Bullet Feet.
K-478 Stainless Steel Bullet Feet.

Lever Operated Drain

K-5



Twist Handle 2" IPS

Lever Drain Support Bracket

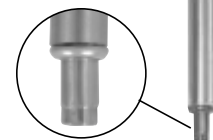
K-4



See Section G for more Lever Drains
and specifications

INDIVIDUAL
Stainless
Steel Legs
with
Stainless Steel
Adjustable
Bullet Feet

K-475



Customer Service Available To Assist You **1-800-645-3166** 8:30 am - 8:00 pm E.S.T.

Email Orders To: customer@advancetabco.com. For Smart Fabrication™ Quotes, Email To: smartfab@advancetabco.com or Fax To: 631-586-2933

NEW YORK

Fax: (631) 242-6900

GEORGIA

Fax: (770) 775-5625

TEXAS

Fax: (972) 932-4795

NEVADA

Fax: (775) 972-1578



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 20 - OVERSHELF, WALL-MOUNTED WITH POT RACK (1 REQ'D)

Advance Tabco PS-15-84

Shelf, wall-mounted with pot rack, stainless steel, 15" overall width, 7 feet long, with 9 plated pot hooks



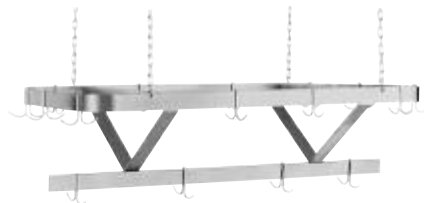
STAINLESS STEEL POT RACKS

Item #: _____ **Qty #:** _____

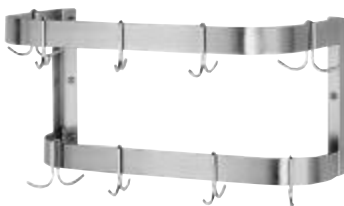
Model #: _____

Project #: _____

CEILING MOUNTED



WALL MOUNTED



**SHELF with
POT RACK**

Ceiling Mounted

L	S/S	POWDER COATED	# of Hooks	Wt
36"	SC-36	GC-36	12	23 lbs.
48"	SC-48	GC-48	12	26 lbs.
60"	SC-60	GC-60	18	29 lbs.
72"	SC-72	GC-72	18	32 lbs.
84"	SC-84	GC-84	18	36 lbs.
96"	SC-96	GC-96	18	44 lbs.
108"	SC-108	GC-108	18	48 lbs.
120"	SC-120	GC-120	18	51 lbs.
132"	SC-132	GC-132	18	55 lbs.
144"	SC-144	GC-144	18	58 lbs.

Wall Mounted

L	S/S	POWDER COATED	# of Hooks	Wt
24"	SW-24	GW-24	12	20 lbs.
36"	SW-36	GW-36	12	23 lbs.
48"	SW-48	GW-48	12	26 lbs.
60"	SW-60	GW-60	18	29 lbs.
72"	SW-72	GW-72	18	32 lbs.
84"	SW-84	GW-84	18	36 lbs.
96"	SW-96	GW-96	18	44 lbs.
108"	SW-108	GW-108	18	48 lbs.
120"	SW-120	GW-120	18	51 lbs.
132"	SW-132	GW-132	18	55 lbs.
144"	SW-144	GW-144	18	58 lbs.

Shelf with Pot Rack

L	12" Wide	Wt	15" Wide	Wt	18" Wide	Wt	# of Hooks
36"	PS-12-36	20 lbs.	PS-15-36	25 lbs.	PS-18-36	30 lbs.	6
48"	PS-12-48	30 lbs.	PS-15-48	35 lbs.	PS-18-48	40 lbs.	6
60"	PS-12-60	40 lbs.	PS-15-60	45 lbs.	PS-18-60	50 lbs.	9
72"	PS-12-72	50 lbs.	PS-15-72	55 lbs.	PS-18-72	60 lbs.	9
84"	PS-12-84	60 lbs.	PS-15-84	65 lbs.	PS-18-84	70 lbs.	9
96"	PS-12-96	70 lbs.	PS-15-96	75 lbs.	PS-18-96	80 lbs.	9
108"	PS-12-108	80 lbs.	PS-15-108	85 lbs.	PS-18-108	90 lbs.	9
120"	PS-12-120	90 lbs.	PS-15-120	95 lbs.	PS-18-120	100 lbs.	9
132"	PS-12-132	100 lbs.	PS-15-132	105 lbs.	PS-18-132	110 lbs.	9
144"	PS-12-144	110 lbs.	PS-15-144	115 lbs.	PS-18-144	120 lbs.	9

Units 8 ft. and larger are furnished with three (3) sets of supports brackets.

FEATURES: (Ceiling Mounted)

Ceiling suspension with chain hangers.
Optional stainless steel Flat Bar in lieu of Chain available. Use **TA-98**.

MATERIAL:

Flat steel bar is 2" x 1/4", either stainless steel or powder coated (as specified).

Pot hooks are plated.

24" long chain hangers are plated.

CONSTRUCTION:

All welded stainless steel units are blended to a satin finish.

All powder coated units are coated with FDA approved material.

FEATURES: (Wall Mounted)

Secured to wall by means of bolts through welded brackets.
(Hardware not provided)

MATERIAL:

Flat steel bar is 2" x 1/4", either stainless steel or powder coated (as specified).

Pot hooks are plated.

CONSTRUCTION:

All welded stainless steel units are blended to a satin finish.

All powder coated units are coated with FDA approved material.

FEATURES: (Shelf/Pot Rack)

A dual purpose unit for shelf and utensil storage.

Secured to wall by means of bolts through welded brackets.
(Hardware not provided)

MATERIAL:

Flat stainless steel bar is 2" x 1/4".
Pot hooks are plated.

Type "430" stainless steel shelf.

CONSTRUCTION:

All welded stainless steel units are blended to a satin finish.



Customer Service Available To Assist You 1-800-645-3166 8:30 am - 8:00 pm E.S.T.

Email Orders To: customer@advancetabco.com. For Smart Fabrication™ Quotes, Email To: smartfab@advancetabco.com or Fax To: 631-586-2933

NEW YORK

Fax: (631) 242-6900

GEORGIA

Fax: (770) 775-5625

TEXAS

Fax: (972) 932-4795

NEVADA

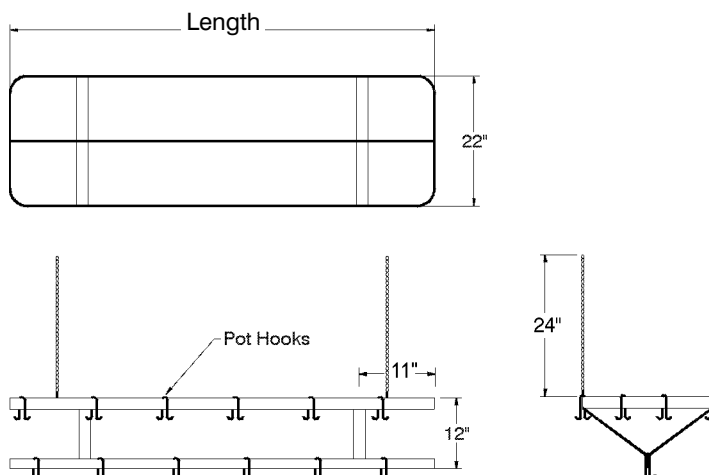
Fax: (775) 972-1578

DETAILS and SPECIFICATIONS

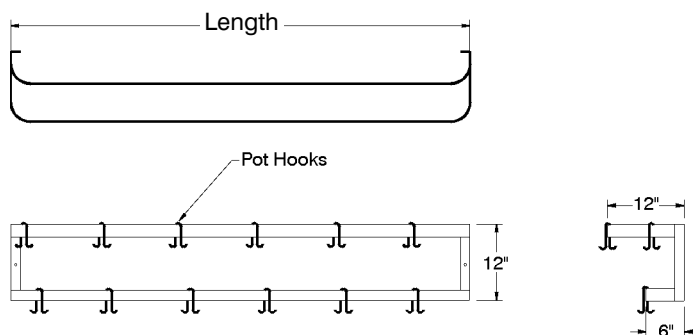
TOL $\pm .500"$

ALL DIMENSIONS ARE TYPICAL

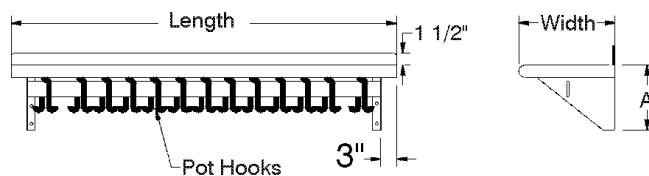
Ceiling Mounted



Wall Mounted



Shelf with Pot Rack



Width	A
12"	10"
15"	10"
18"	10"





Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 21 - SINK, HAND (1 REQ'D)

Krowne Metal HS-2

Hand Sink, 17" x 15" OA, wall mount with bracket, 14" x 10" front-to-back x 6" deep compartment, splash mount gooseneck faucet, 1-1/2" drain, stainless steel construction



Hand Sinks

Model: _____

Item #: _____ Quantity: _____

Project: _____



Model HS-9



Model HS-1



Model HS-2



Model HS-4



Model HS-5



Model HS-6



Model HS-7



Model HS-8



Model HS-10



- **Fabrication:**

One piece 304 series stainless steel. All seams tig welded and polished.

- **Bowl:**

Deep drawn with stamped rim on 17" models to prevent spillage.

- **Wall Mounting Bracket:**

Offset design for added strength.

- **Faucet:**

4" OC faucet supplied (wall or deck).

- **Drain:**

Stainless Steel.

- **Drain with Overflow:**

Stainless Steel with plastic overflow tube and inlet.

- **Plumbing:**

1/2" IPS hot and cold water.

1 1/2" IPS drain outlet.

Approved By: _____

Hand Sinks



**Metal
Corporation**

257 Verona Ave. Newark, New Jersey 07104

www.krowne.com

sales@krowne.com

Phone: 800-631-0442

FAX: 973-485-1424



Hand Sinks

NSF

Model: _____ Item #: _____ Quantity: _____ Project: _____

HS-9 12 lbs.	HS-1 12 lbs.	HS-2 14 lbs.
HS-4 14 lbs.	HS-5 15 lbs.	HS-6 11 lbs.
HS-7 30 lbs.	HS-8 35 lbs.	HS-10 19 lbs.

Options: check box(es) for required option(s)

- ☐ H-109 Faucet Upgrade
☐ H-100 1 1/2" IPS Chrome Plated P-Trap
☐ H-102 Wrist Handle Faucet
☐ H-103 Wrist Handle Kit

- ☐ H-104 Wall Mount Soap Dispenser
☐ H-105 Wall Mounted Towel Dispenser
☐ H-106 One Side Splash (specify side)
☐ H-107 Two Side Splashes
☐ H-108 Stainless Steel Skirt
☐ H-110 Side Support Brackets

Plumbing Requirements:

Install 36" Working Height
 1/2" Faucet Supply 12" from Floor
 1 1/2" Drain Line 23 1/4" from Floor

Approved By: _____

Due to our commitment to continued product improvement, specifications are subject to change without notice.

Krowne Metal
 Corporation

257 Verona Ave. Newark, New Jersey 07104

www.krowne.com sales@krowne.com

Phone: 800-631-0442

FAX: 973-485-1424



Kitchen Equipment & Supply Co.

Pensacola
4148 Barrancas Ave.
Pensacola, FL. 32507
Ph: 850-456-1633
Fax: 850-457-1872

Mary Esther
95 Mary Esther Blvd.
Mary Esther, FL. 32569
Ph: 850-243-7900
Fax: 850-243-2121

Panama City
7930 Front Beach Rd.
Panama City Beach, FL. 32407
Ph: 850-234-1522
Fax: 850-234-3624

Mobile, Alabama
2716 Government Blvd.
Mobile, Al. 36606
Ph: 251-450-2221
Fax: 251-450-3111

SUBMITTAL SHEET

ITEM# 22 - SHELVING, WIRE (1 REQ'D)

Olympic J2472K

Shelf, wire, 24" x 72", green epoxy finish with chromate substrate, NSF

OLYMPIC
STORAGE COMPANY

Reliable space ... economically.

OLYMPIC
STORAGE COMPANY
Reliable space ... economically.

Wire Shelving Green Epoxy



OLYMPIC WIRE SHELVING GREEN EPOXY

- **Unique Design:** The open wire design of these carbon-steel shelves minimizes dust accumulation and allows a free circulation of air, greater visibility of stored items and greater light penetration.
- **Versatile Construction:** Olympic wire shelving can change as quickly as your needs change.
- **Fast, Secure Assembly:** Posts have circular grooves at 1" (25mm) intervals. A tapered split sleeve snaps together around each post. Tapered openings in the shelf corners slide over the tapered split sleeves providing a positive lock. Shelf is assembled in minutes without the use of any special tools.
- **Shelf Wires:** Run front to back, allowing you to slide items on and off shelves smoothly.
- **Shelf Accessibility:** Shelves can be loaded/unloaded easily from all sides. This open construction allows use of maximum storage space of cube.
- **Adjustability:** Shelves can be adjusted at 1" (25mm) intervals along the entire length of the post.
- **Finish:** Green epoxy finish with chromate substrate.
- **Posts:** Bolt levelers compensate for surface irregularities on stationary posts. Posts also available for mobile application.
- **Warranty:** Olympic green epoxy coated shelves and posts carry a 7 year limited warranty against rust and corrosion.

OLYMPIC
STORAGE COMPANY
Reliable space ... economically.**Olympic Storage Company**

OLYMPIC WIRE SHELVING GREEN EPOXY

OLYMPIC™
STORAGE COMPANY
 Reliable space ... economically.

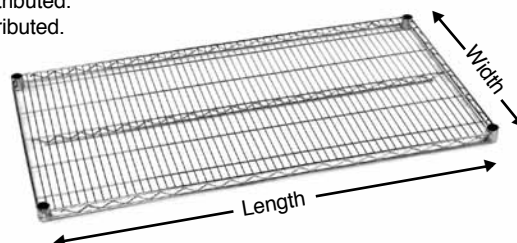
WIRE SHELVES

Width/Length		Approx. Weight Per Shelf		Pack Quantity	Green Epoxy
(in.)	(mm)	(lbs.)	(kg)		
14 x 30	355 x 760	7	3.2	4	J1430K
14 x 36	355 x 914	8	3.6	4	J1436K
14 x 42	355 x 1066	9.5	4.3	4	J1442K
14 x 48	355 x 1219	10.5	4.7	4	J1448K
14 x 60	355 x 1524	14	6.3	2	J1460K
14 x 72	355 x 1829	17	7.7	2	J1472K
18 x 24	457 x 610	7	3.2	4	J1824K
18 x 30	457 x 760	8	3.6	4	J1830K
18 x 36	457 x 914	9.5	4.3	4	J1836K
18 x 42	457 x 1066	11	5	4	J1842K
18 x 48	457 x 1219	12	5.4	4	J1848K
18 x 54	457 x 1370	14.5	6.6	2	J1854K
18 x 60	457 x 1524	17	7.7	2	J1860K
18 x 72	457 x 1829	20	9.1	2	J1872K
21 x 24	530 x 610	8	3.6	4	J2124K
21 x 30	530 x 760	9	4.1	4	J2130K
21 x 36	530 x 914	11	5	4	J2136K
21 x 42	530 x 1066	12	5.4	4	J2142K
21 x 48	530 x 1219	14	6.4	4	J2148K
21 x 54	530 x 1370	16	7.3	2	J2154K
21 x 60	530 x 1524	18	8.2	2	J2160K
21 x 72	530 x 1829	24	10.9	2	J2172K
24 x 24	610 x 610	9	4.1	4	J2424K
24 x 30	610 x 760	11	5.0	4	J2430K
24 x 36	610 x 914	13	5.9	4	J2436K
24 x 42	610 x 1066	15	6.8	4	J2442K
24 x 48	610 x 1219	16	7.3	4	J2448K
24 x 54	610 x 1370	19	8.6	2	J2454K
24 x 60	610 x 1524	21	9.5	2	J2460K
24 x 72	610 x 1829	26	11.8	2	J2472K

Load Capacity:

Up to 48" (1220mm) Length = 800 lbs. (363kg), evenly distributed.

54" - 72" (1829mm) Length = 600 lbs. (272kg), evenly distributed.



Split Sleeves

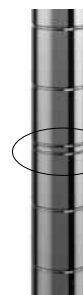
POSTS

Approx. Weight Per Post (lbs.)		Pack Quantity	Height* Stationary Post (in.)		Cat. No. Stationary Post Green Epoxy	Height** Mobile Post (in.)		Cat. No. Mobile Post Green Epoxy
2	0.9	8	34 1/2	875	J33K	34 3/4	857	J33UK
3	1.4	8	54 9/16	1385	J54K	53 13/16	1366	J54UK
3 1/2	1.6	8	62 9/16	1590	J63K	61 13/16	1570	J63UK
4	1.8	8	75 5/8	1895	J74K	73 7/8	1873	J74UK
5	2.3	8	86 5/8	2200	J86K	85 7/8	2181	J86UK

*Height includes leveling bolt and cap.

**Mobile posts come without leveling bolt assembly and accommodate stem casters.

Height is for post only.



Posts are grooved at 1" (25mm) increments and numbered at 2" (50mm) increments. Posts are double-grooved every 8" (203mm) for easy identification.

OLYMPIC™
STORAGE COMPANY
 Reliable space ... economically.

OLY-001E - Epoxy Wire Shelving
 Rev. 3/10

Information and specifications are subject to change without notice. Please confirm at time of order.

Copyright © 2010 Olympic Storage Company

Wire Shelving Green Epoxy

OLYMPIC™
STORAGE COMPANY
 Reliable space ... economically.

SECTION 11491 - GYMNASIUM EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following gymnasium equipment:

1. Basketball equipment.
2. Volleyball equipment.
3. Safety pads.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. LEED Submittal:

1. Product Data for Credit EQ 4.4: For particleboard, documentation indicating that product contains no urea formaldehyde.

C. Shop Drawings: For gymnasium equipment. Include plans, elevations, sections, details, and attachments to other work.

D. Coordination Drawings: Court layout plans, drawn to scale, and coordinating floor inserts, game lines, and markers applied to finished flooring.

E. Samples for Initial Selection: For each type of gymnasium equipment indicated.

F. Maintenance data.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: **An employer of workers trained and approved by manufacturer.**

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - 1. Extruded Bars, Profiles, and Tubes: **ASTM B 221** (**ASTM B 221M**).
 - 2. Cast Aluminum: ASTM B 179.
 - 3. Flat Sheet: **ASTM B 209** (**ASTM B 209M**).
- B. Steel: Comply with the following:
 - 1. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
 - 2. Steel Tubing: ASTM A 500 or ASTM A 513, cold formed.
 - 3. Steel Sheet: ASTM A 1011/A 1011M.
- C. Support Cable: Manufacturer's standard galvanized steel aircraft cable. Provide fittings complying with cable manufacturer's written instructions for size, number, and method of installation.
- D. Castings and Hangers: Malleable iron, ASTM A 47/A 47M, grade required for structural loading.
- E. Softwood Plywood: DOC PS 1, exterior.
- F. Particleboard: ANSI A208.1, **made with adhesive containing no urea formaldehyde**.
- G. Equipment Wall-Mounting Board: Wood, manufacturer's standard.
- H. Anchors, Fasteners, Fittings and Hardware: Manufacturer's standard corrosion resistant, or noncorrodible units, concealed.
- I. Grout: ASTM C 1107 with minimum strength recommended in writing by gymnasium equipment manufacturer.

2.2 BASKETBALL EQUIPMENT

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. AALCO Manufacturing.
 - 2. Arizona Courtlines, Inc.
 - 3. ADP Lemco Inc.
 - 4. Basketball Products International; a division of American Athletic, Inc.
 - 5. Bison Inc.
 - 6. Douglas Industries, Inc.

7. Draper Inc.
 8. Institutional Products Inc.
 9. Jaypro Sports, LLC.
 10. L. A. Steelcraft.
 11. Performance Sports Systems.
 12. Porter Athletic Equipment Company.
 13. P. W. Athletic Mfg. Co.
- B. General: Provide equipment complying with requirements in **NFHS's "NFHS Basketball Rule Book."**
- C. Overhead-Supported Backboard:
1. Folding Type: Provide manufacturer's standard assembly for **forward-folding, front-braced, backward-folding** backboard, with hardware and fittings to permit folding.
 - a. Finish: Manufacturer's standard **primer for field finishing**.
 2. Goal Height Adjuster: Adjustable from **8 to 10 feet (2.4 to 3 m)** with gear-drive mechanism, locking in any position within adjustment range, with visible height scale attached to side of framing.
- D. Backboard Safety Device: Designed to limit free fall if support cable, support chain, pulleys, fittings, winch, or related components fail.
- E. Winch: Hoist, consisting of heavy-duty, fully enclosed worm-gear, brake, cable drum, cable, and fittings, for mounting on **wall with equipment mounting board**; designed to move and hold backboard in any raised or lowered position.
- F. Backboard Electric Operator: Provide operating machine of size and capacity recommended by manufacturer for equipment specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, and remote controls. Coordinate wiring requirements and electrical characteristics with building electrical system.
1. Motor Characteristics: Sufficient to start, accelerate, reverse, and operate connected loads at designated speeds within installed environment and with indicated operating sequence, and without exceeding nameplate rating or considering service factor. Comply with NEMA MG 1.
 2. Remote-Control Station(s): NEMA ICS 6, Type 1 enclosure for **recessed or flush** mounting, momentary-contact, three-position switch-operated control with up, down, and off functions.
 - a. Key Switch: Provide **one key** per station.
 3. Limit Switches: Adjustable switches, interlocked with motor controls and set to automatically stop basketball equipment at fully retracted and fully lowered positions.
- G. Basketball Backboard:

1. Shape and Size:
 - a. Rectangular, **72 by 48 inches (1800 by 1200 mm)**.
 2. Backboard Material: With predrilled holes or preset inserts for mounting goals, and as follows:
 - a. Glass: Not less than **1/2-inch- (13-mm-)** thick, transparent tempered glass.
 - 1) Rim-Restraining Device: Complying with NCAA and NFHS rules and designed to ensure that basket remains attached if glass backboard breaks.
 3. Target Area and Border Markings: Permanently etched in white color, marked in **manufacturer's standard pattern and stripe width**.
- H. Goal Mounting Assembly: Compatible with goal, backboard, and support framing for goal attachment.
- I. Basketball Goals: Complete with flanges, braces, attachment plate, and evenly spaced loops welded around underside of ring.
1. Single-Rim Basket Ring Competition Goal.
 2. Finish: **Manufacturer's standard** finish.
- J. Basketball Nets: 12-loop-mesh net, between **15 and 18 inches (400 to 450 mm)** long, sized to fit rim diameter.
1. Cord: Made from white **nylon**.
- K. Backboard Safety Pads: Designed for backboard thickness indicated and extending continuously along bottom and up sides of backboard and over goal mounting and backboard supports as **per manufacturer's standard design**.
1. Color: **Gray**.
- 2.3 VOLLEYBALL EQUIPMENT
- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. AALCO Manufacturing.
 2. ADP Lemco Inc.
 3. American Athletic, Inc.
 4. Arizona Courtlines, Inc.
 5. Bison Inc.
 6. Douglas Industries, Inc.
 7. Draper Inc.
 8. Jaypro Sports, LLC.
 9. L. A. Steelcraft.

10. Performance Sports Systems.
 11. Porter Athletic Equipment Company.
 12. P. W. Athletic Mfg. Co.
 13. Schelde North America.
 14. Sports Imports.
- B. General: Provide equipment complying with requirements in **NFHS's "NFHS Volleyball Rule Book."**
- C. Floor Insert: **Aluminum** floor plate; and steel pipe sleeve, concealed by floor plate, with capped bottom end, sized with ID to fit post standards, not less than **12 inches (300 mm) long** to securely anchor pipe sleeve **below finished floor in concrete footing**; with anchors designed for securing floor insert to floor substrate indicated; **quantity as indicated.**
1. Floor Plate: **Manufacturer's standard** hinged access cover, designed to be flush with adjacent flooring. Provide **two** tool(s) for unlocking access covers.
- D. Post Standards: Removable, paired volleyball post standards as indicated. **Adjustable, telescoping** height. Fabricated from **manufacturer's standard metal** pipe or tubing, with nonmarking plastic or rubber end cap or floor bumper to protect permanent flooring. Finished with manufacturer's standard factory-applied, baked powder-coating finish.
1. Nominal Pipe or Tubing Diameter: **3-inch (75-mm)** OD at base.
 2. Net Height Adjuster: **Manufacturer's standard mechanism** for height adjustment, complete with fittings; designed for positioning net at heights indicated.
 - a. Net Heights: Between **for age 12 and under net height and boys'/men's volleyball net height, 84 and 95-5/8 inches (2130 and 2430 mm)** or more.
- E. Net: **32 feet (9.75 m)** long; **1 per pair of paired post standards:**
1. Width and Mesh: Competition volleyball net, **36 inches (910 mm)** with **4-inch- (102-mm-)** square mesh made of black nylon string.
 2. Dowels: Not less than **1/2-inch- (13-mm-)** diameter fiberglass or **1-inch- (25-mm-)** diameter wood. Provide two dowels per net threaded through each side hem sleeve for straightening net side edges.
 3. Net Antennas: **3/8-inch- (9.5-mm-)** diameter, high-tensile-strength, extruded fiberglass or plastic rods, **72 inches (1800 mm)** long, extending above top hem band of net, with alternating white and red bands according to competition rules. Provide two antennas per net.
 4. Boundary Tape Markers: **2-inch- (50-mm-)** wide white strip, secured to net top and bottom with hook-and-loop attachment. Provide two tape markers per net for marking court boundaries.
- F. Net Tensioning System: Designed to adjust and hold tension of net. Fully enclosed, nonslip **manufacturer's standard**-type winch with cable length and fittings for

connecting to net lines, positive-release mechanism, and **manufacturer's standard** handle.

- G. Bottom Net Lock Tightener: Manufacturer's standard.
- H. Judges' Stands: Provide manufacturer's standard units designed to be **freestanding, folding for storage with wheels for transporting**.
- I. Safety Pads: **Comply with NCAA and NFHS requirements**. Provide pads consisting of not less than **1-inch- (25-mm-)** thick, multiple-impact-resistant **manufacturer's standard** foam filler covered by puncture- and tear-resistant, **manufacturer's standard** fabric cover; with fire-test-response characteristics indicated. Provide pads with hook-and-loop closure or attachments for the following components:
 - 1. Post Standards: **Wraparound** style, designed to totally enclose each standard to a height of not less than **66 inches (1680 mm)**; 1 per post.
 - 2. Net Lines: Four per net.
 - 3. Judges' Stands: Designed to totally enclose each unit.
 - 4. Fabric Cover Flame-Resistance Ratings: **Passes NFPA 701**.
 - 5. Fabric Color: **As selected by Architect from manufacturer's full range**.
- J. Post Standard Transporter: Manufacturer's standard.
- K. Wall Storage Rack: Manufacturer's standard.
- L. Storage Cart: Manufacturer's standard.

2.4 SAFETY PADS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. AALCO Manufacturing.
 - 2. ADP Lemco Inc.
 - 3. American Athletic, Inc.
 - 4. Draper Inc.
 - 5. Institutional Products Inc.
 - 6. Jaypro Sports, LLC.
 - 7. Performance Sports Systems.
 - 8. Porter Athletic Equipment Company.
- B. Safety Pad Surface-Burning Characteristics: ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. Flame-Spread Index: **25 or less**.
 - 2. Smoke-Developed Index: 450 or less.
- C. Pad Coverings: Provide safety pad fabric covering fabricated from puncture- and tear-resistant, not less than **14-oz./sq. yd (475-g/sq. m)** PVC-coated polyester or nylon-

reinforced PVC fabric treated with fungicide for mildew resistance; with surface-burning characteristics indicated.

- D. Wall Safety Pads: Padded wall wainscot panels designed to be attached in a continuous row; each panel section consisting of fill laminated to backer board with visible surfaces fully covered by seamless fabric covering, free of sag and wrinkles and firmly attached to back of backer board.
 - 1. Fill: Manufacturer's standard.
 - 2. Size: Each panel section, **24 inches (600 mm) wide by not less than 60 inches (1520 mm) long.**
 - 3. Installation Method: Manufacturer's standard.
 - 4. Fabric Covering Color(s): **As selected by Architect from manufacturer's full range color(s).**

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions **and competition rules indicated for each type of gymnasium equipment.** Complete equipment field assembly, where required.
- B. Unless otherwise indicated, install gymnasium equipment after other finishing operations, including painting, have been completed.
- C. Permanently Placed Gymnasium Equipment and Components: Rigid, level, plumb, square, and true; anchored securely to supporting structure; positioned at locations and elevations indicated on Shop Drawings; in proper relation to adjacent construction; and aligned with court layout.
- D. Connections: Connect automatic operators to building electrical system.
- E. Removable Gymnasium Equipment and Components: Assemble in place to verify that equipment and components are complete and in proper working order. Instruct Owner's designated personnel in properly handling, assembling, adjusting, disassembling, transporting, storing, and maintaining units. Disassemble removable gymnasium equipment after assembled configuration has been approved by **Owner**, and store units in location indicated on Drawings.

3.2 ADJUSTING

- A. Adjust movable components of gymnasium equipment to operate safely, smoothly, easily, and quietly, free from binding, warp, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Lubricate hardware and moving parts.

3.3 CLEANING

- A. After completing gymnasium equipment installation, inspect components. Remove spots, dirt, and debris and touch up damaged shop-applied finishes according to manufacturer's written instructions.
- B. Replace gymnasium equipment and finishes that cannot be cleaned and repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 11491

SECTION 11492 - GYMNASIUM DIVIDERS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes gymnasium divider curtains.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation including loads, point reactions, and locations for attachment of gymnasium dividers to structure.
- D. Samples for Initial Selection: For each type of gymnasium divider curtain fabric indicated.
- E. Maintenance data.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: **An employer of workers trained and approved by manufacturer.**

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - 1. Extruded Bars, Profiles, and Tubes: **ASTM B 221** (ASTM B 221M).
 - 2. Cast Aluminum: ASTM B 179.
 - 3. Flat Sheet: **ASTM B 209** (ASTM B 209M).
- B. Steel: Comply with the following:
 - 1. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
 - 2. Steel Tubing: ASTM A 500 or ASTM A 513, cold formed.
 - 3. Steel Sheet: ASTM A 1011/A 1011M.
- C. Support Cable: Manufacturer's standard galvanized steel aircraft cable. Provide fittings complying with cable manufacturer's written instructions for size, number, and method of installation.

- D. Castings and Hangers: Malleable iron, ASTM A 47/A 47M, grade required for structural loading.
- E. Anchors, Fasteners, Fittings and Hardware: Manufacturer's standard corrosion resistant, or noncorrodible units, concealed.

2.2 DIVIDER CURTAINS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. AALCO Manufacturing.
 - 2. ADP Lemco Inc.
 - 3. American Athletic, Inc.
 - 4. Arizona Courtlines, Inc.
 - 5. Basketball Products International; a division of American Athletic, Inc.
 - 6. Douglas Industries, Inc.
 - 7. Draper Inc.
 - 8. Institutional Products Inc.
 - 9. Jaypro Sports, LLC.
 - 10. Performance Sports Systems.
 - 11. P. W. Athletic Mfg. Co.
 - 12. Revere Plastics, Inc.
- B. Divider Curtains: **Manually** operated, **walk draw**, and as follows:
 - 1. Curtain, Mesh: Woven fabric of 100 percent polyester yarn coated with PVC weighing not less than **6.5 oz./sq. yd (220 g/sq. m)**. Mesh Color: **White**.
 - 2. Divider Curtain Flame-Resistance Ratings: Passes NFPA 701, inherently and permanently flame resistant.
 - a. Permanently attach label to each fabric of curtain assembly indicating whether fabric is inherently and permanently flame resistant or treated with flame-retardant chemicals, and whether it will require retreatment after designated time period or cleaning.
- C. Curtain Fabrication: Fused seams and the following:
 - 1. Top Hem: Reinforce with double thickness mesh for **grommets**.
 - 2. Bottom Hem for Draw Curtains: Floor-length curtains with hems **2 inches (50 mm)** above finished floor with proof coil chain in pocket.
- D. Accessories:
 - 1. Grommets: Manufacturer's standard size and spacing, for snaps or S-hooks.
 - 2. Proof Coil Chain: Grade 30, No. 8, zinc plated, **3/16 inch (4.7 mm)**, ASTM A 413/A 413M.
 - 3. Curtain Battens: Manufacturer's standard.
- E. Divider Curtain Operator: **Walk-draw track**.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Complete field assembly where required.
- B. Unless otherwise indicated, install gymnasium dividers after other finishing operations, including painting, have been completed.
- C. Gymnasium Dividers and Components: Rigid, level, plumb, square, and true; anchored securely to supporting structure; positioned at locations and elevations indicated on Shop Drawings; in proper relation to adjacent construction; and aligned with court layout.

3.2 ADJUSTING

- A. Adjust movable components of gymnasium dividers to operate safely, smoothly, easily, and quietly, free from binding, warp, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Lubricate hardware and moving parts.

3.3 CLEANING

- A. After completing gymnasium divider installation, inspect components. Remove spots, dirt, and debris and touch up damaged shop-applied finishes according to manufacturer's written instructions.
- B. Replace gymnasium divider components and finishes that cannot be cleaned and repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 11492

SECTION 12660 - TELESCOPING STANDS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. **Wall-attached** telescoping stands.

1.2 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for telescoping stands.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Indicate field measurements on Shop Drawings.
- C. Samples: For each exposed finish.
- D. Installer qualification data.
- E. Operation and maintenance data.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Manufacturer's Engineering Responsibility: Preparation of data for telescoping stands, including Shop Drawings, and comprehensive engineering analysis by a qualified professional engineer.
- C. Safety Standard: Provide telescoping stands that comply with requirements in **NFPA 102**.
- D. Accessibility Requirements: Provide telescoping stands that comply with requirements in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)".
- E. Preinstallation Conference: Conduct conference at **Project site**.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
1. Hussey Seating Company.
 2. Interkal LLC.
 3. Irwin Folding Bleacher Company.

2.2 TELESCOPING STANDS

- A. Wall-Attached Telescoping Stands: Rear of understructure permanently attaches to wall construction.
1. Operation: **Manual**.
- B. Bench Seats and Skirts:
1. Material **Molded polyethylene plastic with contour seat surface**.
 - a. Colors: **As selected by Architect from manufacturer's standard**.
 2. Bench Height: **Not less than 16 inches (406.4 mm) or more than 18 inches (457.2 mm)**.
 3. Bench Depth: **12 inches (304.8 mm)**.
- C. Wheelchair-Accessible Seating: Locate **cutouts** to provide wheelchair-accessible seating at locations indicated on Drawings.
1. Equip tiers adjacent to wheelchair-accessible seating with front rails as required by referenced safety standard.
 2. Equip cutouts with full-width front closure panels that match decking construction and finish and that extend from underside of tiers adjacent to cutouts to **1-1/2 inches (38.1 mm)** from finished floor.
- D. Deck: Plywood, APA grade trademarked, DOC PS 1.
1. Finish: **Manufacturer's standard finish**.
 2. Color: **As selected by Architect from manufacturer's standard colors**.
- E. Risers: Steel sheet with manufacturer's standard rust-inhibiting coating or hot-dip galvanized finish.
- F. Rails: Structural steel, finished with manufacturer's standard powder coat system.

1. Color: **Black**.
- G. Understructure: Structural steel.
1. Finish: **Manufacturer's standard** rust-inhibiting finish.
 2. Color: **Manufacturer's standard**.
- H. Support Column Wheels: Nonmarring, soft, rubber-face wheel assembly under each support column.
1. Include wheels of size, number, and design required to support stands and operate smoothly without damaging the flooring surface, but not less than four per column or less than **3-1/2 inches (88.9 mm)** in diameter and **1 inch (25.4 mm)** wide.
- I. Aisle Closures: Manufacturer's standard that produce flush vertical face at aisles when system is stored.
- J. Fasteners: Vibration proof, in manufacturer's standard size and material.
- K. Accessories:
1. Slip-resistant, abrasive tread **surfaces** at vertical aisles.
 2. Intermediate aisle steps, fully enclosed, at each vertical aisle.
 3. Transitional top step, fully enclosed, at each vertical aisle where last row of telescoping stands is adjacent to a cross aisle.
 4. Removable front steps, fully enclosed, at each vertical aisle, that engage with front row to prevent accidental separation or movement and are equipped with a minimum of four skid-resistant feet.
 5. **Removable** mid-aisle handrails located at centerline of each vertical aisle with seating on both sides.
 6. End rails (guards) that are **removable**.
 7. Back rails (guards) along rear of units where required by referenced safety standard.
 8. Front rails (guards) along front of units where required by referenced safety standard.
 9. Removable, programming-support front rails to allow seating in upper rows while lower rows remain in the stored position.
 10. Rear fillers including supports for closing openings between top row and rear wall of adjoining construction.
 11. Gap fillers for closing openings between stand units or between stand units and adjoining construction.
 12. End panels covering exposed ends of stands in stored position.
 13. Removable scorer's table that attaches to mounting sockets installed in telescoping stand unit.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install telescoping stands to comply with referenced safety standard and manufacturer's written instructions.
- B. Perform the following tasks on completion of installation:
 - 1. Lubricate, test, and adjust each telescoping stand unit so that it operates according to manufacturer's written operating instructions.
 - 2. Clean installed telescoping stands on exposed and semiexposed surfaces. Touch up shop-applied finishes or replace components as required to restore damaged or soiled areas.

3.2 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain telescoping stands. Refer to Division 1 Section "Demonstration and Training."

END OF SECTION 12660

SECTION 12485 RECESSED ENTRANCE MATS
PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Aluminum grid floor mats.
 - 2. Recessed frame.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

- A. ASTM International (ASTM):
 - 1. D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
 - 2. E648 - Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

1.3 SYSTEM DESCRIPTION

- A. Floor Mat and Frame: Support minimum 1500 pound rolling load without permanent deformation or damage.

1.4 SUBMITTALS

- A. Submittals for Review:
 - 1. Shop Drawings: Include locations, dimensions, materials, finishes, and installation details.
 - 2. Product Data: Describe mat [and frame] construction and finishes.
 - 3. Samples: 3 inch long tread samples showing available colors.
- B. Quality Control Submittals:
 - 1. Certificates of Compliance: Certification from an independent testing laboratory that floor mats meet fire hazard classification requirements.

1.5 QUALITY ASSURANCE

- A. Slip Resistance: Minimum coefficient of friction of 0.60, tested to ASTM D2047.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Arden Architectural Specialties, Inc. (www.ardenarch.com)
 - 2. Balco, Inc. (www.balcousa.com)
 - 3. Construction Specialties, Inc. (www.c-sgroup.com)
 - 4. JL Industries. (www.jlindustries.com)
 - 5. Pawling Corp. (www.pawling.com)
- B. Substitutions: Under provisions of Division 01.

2.2 COMPONENTS

- A. Aluminum Grid Mat:
 - 1. Treads: Extruded aluminum, individual type joined with PVC spacers.
 - 2. Frame: Extruded aluminum, recessed installation.
 - 3. Tread inserts: 100 percent solution dyed exterior grade nylon carpet, antimicrobial and stain treated, bonded to rigid backing.
 - 4. Depth: 3/4 inch.

2.3 FINISHES

- A. Aluminum:
 - 1. Mill finish, clear.
 - 2. Apply zinc rich primer to surfaces in contact with concrete.
- B. Tread Inserts: color to be selected from manufacturer's full color range.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Set recessed frame level, plumb, and aligned, with top edge flush with adjacent finish flooring.
- C. Place mats level with top of frame. Place without adhesive.

END OF SECTION