PROJECT MANUAL
CONSTRUCTION DOCUMENTS

HIDALGO COUNTY
PRECINCT 4
MEMORIAL PARK PHASE I
107 HIGHWAY AND SUNFLOWER ROAD
EDINBURG, TEXAS 78539
No. C-17-184-06-27

Volume I

Set Number_____

SEPTEMBER 27, 2018

DOCUMENT 00 01 01
PROJECT TITLE PAGE

PROJECT MANUAL – 100% CONSTRUCTION DOCUMENTS

PROJECT DETAILS

Project consists of Design of Memorial Park, Phase I
Approximate 16.83 Acres
Hidalgo County Pct. 4
Located at 107 Highway and Sunflower Road, Edinburg, Texas 78539

OWNER

County of Hidalgo
100 East Cano, 2nd Floor
Edinburg, Texas 78539

OWNER REPRESENTATIVE

County of Hidalgo
Commissioner Precinct 4
Mr. Joseph Palacios
Director of Field Operations
1051 N. Doolittle Rd
Edinburg, Texas 78542

ARCHITECT

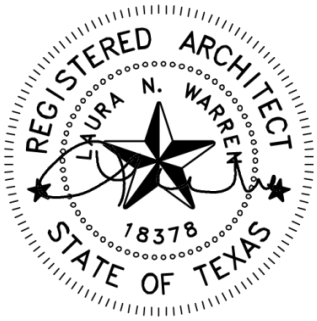
Laura N. Warren Ogletree, AIA/President
The Warren Group Architects, Inc.
1801 S. 2nd Street, Suite 330
McAllen, Texas 78503
Office_956.994.1900
lwarren@twgarch.com

END OF DOCUMENT

DOCUMENT 00 01 07
SEALS PAGE

1.1 DESIGN PROFESSIONALS OF RECORD

SEAL



EXP 10-31-2019

ARCHITECT	The Warren Group Architects Inc. Texas Registration No. 30112289 Sections except where indicated as prepared by other design professionals of record.

END OF DOCUMENT

DOCUMENT 00 01 07
SEALS PAGE

1.1 DESIGN PROFESSIONALS OF RECORD

STRUCTURAL ENGINEER-

Solorio, Inc.
Texas Registration No. XXXXX
Sections except where indicated
as prepared by other design
Professionals of record.

The following sections:

END OF DOCUMENT

DOCUMENT 00 01 07
SEALS PAGE

1.1 DESIGN PROFESSIONALS OF RECORD

CIVIL ENGINEERS — South Texas Infrastructure Group, LLC
Texas Registration No. XXXXX
Sections except where indicated
as prepared by other design
Professionals of record.

The following sections:

END OF DOCUMENT

DOCUMENT 00 01 10
TABLE OF CONTENTS

DOCUMENT 00 11 16
INVITATION TO BID

1.1 PROJECT INFORMATION

A. Notice to Bidders: Bidders invited to submit bids for Project as described in this Document according to the Instructions to Bidders. General Contractor to submit a Contractors Qualifications Statement at the time of bid; to include company project history comparable in project size, similar projects, financial capability, litigation status, and bonding capabilities.

B. Project Identification: Project Number 1341701/ RFB No. 2017-217-10-25-LHS
Hidalgo County Precinct 4, Design of Memorial Park Phase I
Located at 107 Highway and Sunflower Road, Edinburg, Texas 78539

C. Owner: County of Hidalgo
100 East Cano, 2nd Floor
Edinburg, Texas 78539

D. Architect: Laura Nassri Warren, AIA/Principal
The Warren Group Architects, Inc.
1801 S. 2nd Street, Suite 330
McAllen, Texas 78503.

E. Project Description: Project consists of Design of Memorial Park Phase I: Approximate 16.83 Acres.

a. The project is for General Construction of a new building renovation.

F. Construction Contract: Bids will be received for the following Work:

a. General Contract (all trades) - General Building Construction Renovation.

1.2 BID SUBMITTAL AND OPENING

A. Owner will receive sealed bids until the bid time and date at the location indicated below. Owner will consider bids prepared in compliance with the Instructions to Bidders issued by Owner, and delivered as follows:

1. Bid Date: Wednesday, October 17th, 2018.

2. Bid Time: 10:00 a.m.
Owner shall have the right to reject any or all Bids.
Bids turned in after Bid Time will not be accepted.

3. Delivery Location: Hidalgo County Purchasing Department Conference Room
Attention: Martha Salazar, CPPB
2802 S. Business Highway 281, Hidalgo County New Administration Building,
Edinburg, Texas 78539

B. Bids will be opened and public read by Owner.

C. Bids shall be received from General Contractors only.

1.3 BID SECURITY

A. A Bid Bond is required by Owner.

1.4 PREBID CONFERENCE

A. A Pre-Bid Conference for all bidders will be held at the office of The Warren Group Architects Inc., 1801 South 2nd Street, Ste. 330 McAllen, Texas 78503
B. Date and Time: Thursday, October 4, 2018 at 3:00pm.
C. Prime Bidders Attendance at Prebid meeting is recommended.

1. **Bidders' Questions will be accepted until 2:00 p.m., October 11, 2018. Architect will provide responses no later than 2:00 p.m., October 13, 2018.**

2. Bidders requiring clarification or interpretation of the Bidding Documents shall make a written request which shall reach the Architect at least three days prior to the date for receipt of Bids.

1.5 DOCUMENTS

A. Online Procurement and Contracting Documents: Contact Natanael Perez at nperez@twgarch.com for a download link. Files are available for download after 4:30 pm. Any other questions to be in written/e-mailed format to the attention of Laura Nassri Warren at nperez@twgarch.com and a copy to Natanael Perez. Online access will be provided to prime bidders only. A hard copy of the Construction Documents and any Addendums can be purchased at RGV Reprographics, Inc., 956-686-1525, located at 519 S Broadway St, McAllen, TX 78501. Please note the Notices of Addendums are to be issued digitally.

1.6 TIME OF COMPLETION AND LIQUIDATED DAMAGES

A. Successful Bidder shall begin the Work on receipt of the Notice to Proceed and shall complete the Work within the Contract Time. For each day after Substantial Completion that the work remains incomplete, a penalty of $1,000.00 per day will be charged to the Contractor.

1.7 BIDDER'S QUALIFICATIONS

A. Bidders must be properly licensed under the laws governing their respective trades and be able to obtain insurance and bonds required for the Work. A Performance Bond, a separate Labor and Material Payment Bond, and Insurance in a form acceptable to Owner will be required of the successful Bidder.

1.8 NOTIFICATION

A. This Advertisement for Bids document is issued by Hidalgo County Purchasing Department, Martha Salazar, CPPB, 2802 S. Business Highway 281, Edinburg, Texas 78539.

END OF DOCUMENT

DOCUMENT 00 21 13
INSTRUCTIONS TO BIDDERS

1.1 INSTRUCTIONS TO BIDDERS

A. AIA Document A701, "Instructions to Bidders," is hereby incorporated into the Procurement and Contracting Requirements by reference.

1. A copy of AIA Document A701, "Instructions to Bidders," is bound in this Project Manual.

END OF DOCUMENT

DOCUMENT 00 22 13
SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

1.1 INSTRUCTIONS TO BIDDERS

A. Instructions to Bidders for Project consist of the following:

1. AIA Document A701, "Instructions to Bidders", a copy of which is bound in this Project Manual.
2. The following Supplementary Instructions to Bidders that modify and add to the requirements of the Instructions to Bidders.

1.2 SUPPLEMENTARY INSTRUCTIONS TO BIDDERS, GENERAL

A. The following supplements modify AIA Document A701, "Instructions to Bidders." Where a portion of the Instructions to Bidders is modified or deleted by these Supplementary Instructions to Bidders, unaltered portions of the Instructions to Bidders shall remain in effect.

1.3 ARTICLE 2 - BIDDER'S REPRESENTATIONS

A. Section 2.1.3.1:

1. 2.1.3.1 - The Bidder has investigated all required fees, permits, and regulatory requirements of authorities having jurisdiction and has properly included in the submitted bid the cost of such fees, permits, and requirements not otherwise indicated as provided by Owner.

B. Section 2.1.5:

1. 2.1.5 - The Bidder is a properly licensed Contractor according to the laws and regulations of State of Texas and meets qualifications indicated in the Procurement and Contracting Documents.

C. Section 2.1.6:

1. 2.1.6 - The Bidder has incorporated into the Bid adequate sums for work performed by installers whose qualifications meet those indicated in the Procurement and Contracting Documents.

1.4 ARTICLE 3 - BIDDING DOCUMENTS

A. 3.4 - Addenda:

3.4.3 - Addenda may be issued at any time prior to the receipt of bids.

1. Section 3.4.4.1:

   a. 3.4.4.1 - Owner may elect to waive the requirement for acknowledging receipt of 3.4.4 Addenda as follows:

      1) 3.4.4.1.1 - Information received as part of the Bid indicates that the Bid, as submitted, reflects modifications to the Procurement and Contracting Documents included in an unacknowledged Addendum.

      2) 3.4.4.1.2 - Modifications to the Procurement and Contracting Documents in an unacknowledged Addendum do not, in the opinion of Owner, affect the Contract Sum or Contract Time.

1.5 ARTICLE 4 - BIDDING PROCEDURES

A. 4.1 - Preparation of Bids:

1. Section 4.1.1.1:
   a. 4.1.1.1 - Online Procurement and Contracting Documents: Contact Natanael Perez at nperez@twgarch.com for a download link. Files are available for download after 4:30 pm. Any other questions to be in written/e-mailed format to the attention of Laura Nassri Warren at nperez@twgarch.com and a copy to Natanael Perez. Online access will be provided to prime bidders only. A hard copy of the Construction Documents and any Addendums can be purchased at RGV Reprographics, Inc., 956-686-1525, located at 519 S Broadway St, McAllen, TX 78501. Please note the Notices of Addendums are to be issued digitally.

2. Section 4.1.9:

   a. 4.1.9 - Owner may elect to disqualify a bid due to failure to submit a bid in the form requested, failure to bid requested alternates or unit prices, failure to complete entries in all blanks in the Bid Form, or inclusion by the Bidder of any alternates, conditions, limitations or provisions not called for.

3. Section 4.1.10:

   4.1.10 - County is exempt from Federal Excise Tax, State Tax and Local Tax. Do Not include tax in cost figure. If it is determined that tax was included in the cost figures it will not be included in the tabulation of any awards. Tax exemption certificates will be furnished upon request.

B. 4.3 - Submission of Bids:

1. Section 4.3.1.2:

    a. 4.3.1.2 - Include Bidder's Contractor License Number applicable in Project jurisdiction on the face of the sealed bid envelope.

C. 4.4 - Modification or Withdrawal of Bids:

1. Section 4.4.2:

    a. 4.4.2.1 - Such modifications to or withdrawal of a bid may only be made by persons authorized to act on behalf of the Bidder. Authorized persons are those so identified in the Bidder's corporate bylaws, specifically empowered by the Bidder's charter or similar legally binding document acceptable to Owner, or by a power of attorney, signed and dated, describing the scope and limitations of the power of attorney. Make such documentation available to Owner at the time of seeking modifications or withdrawal of the Bid.

    b. 4.4.2.2 - Owner will consider modifications to a bid written on the sealed bid envelope by authorized persons when such modifications comply with the following: the modification is indicated by a percent or stated amount to be added to or deducted from the Bid; the amount of the Bid itself is not made known by the modification; a signature of the authorized person, along with the time and date of the modification, accompanies the modification. Completion of an unsealed bid form, awaiting final figures from the Bidder, does not require power of attorney due to the evidenced authorization of the Bidder implied by the circumstance of the completion and delivery of the Bid.

D. 4.5 - Break-Out Pricing Bid Supplement:

1. Section 4.5:

a. 4.5 - Provide detailed Schedule of Values cost breakdowns no later than 48 hours after bid opening.

E. 4.6 - Subcontractors, Suppliers, and Manufacturers List Bid Supplement:

1. Section 4.6:

a. 4.6 - Provide list of major subcontractors, suppliers, and manufacturers furnishing or installing products on forms provided no later than two business days following Architect's request. Include those subcontractors, suppliers, and manufacturers providing work totaling three percent or more of the Bid amount. Do not change subcontractors, suppliers, and manufacturers from those submitted without approval of Architect.

1.6 ARTICLE 5 - CONSIDERATION OF BIDS

A. 5.2 - Rejection of Bids:

1. Section 5.2.1:

A. 5.2.1 - Owner reserves the right to reject a bid based on Owner's and Architect's evaluation submitted following opening of bids. Owner's evaluation of the Bidder's qualifications will include: Bidders must be properly licensed under the laws governing their respective trades and be able to obtain insurance and bonds required for the Work. A Performance Bond, a separate Labor and Material Payment Bond, and Insurance in a form acceptable to Owner will be required of the successful Bidder.

1.7 ARTICLE 6 - POSTBID INFORMATION

A. 6.1 - Contractor's Qualification Statement:

1. Section 6.1.1:

a. 6.1.1 - Submit Contractor's Qualification Statement no later than two business days following Architect's request.

B. 6.3 - Submittals:

1. Add Section 6.3.1.4:

a. 6.3.1.4 - Submit information requested in Sections 6.3.1.1, 6.3.1.2, and 6.3.1.3 no later than two business days following Architect's request.

1.8 ARTICLE 7 - PERFORMANCE BOND AND PAYMENT BOND

A. 7.1 - Bond Requirements:

1. Add Section 7.1.1.1:

a. 7.1.1.1 - Both a Performance Bond and a Payment Bond will be required, each in an amount equal to 100 percent of the Contract Sum.

B. 7.2 - Time of Delivery and Form of Bonds:

1. Section 7.2.1:

a. The Bidder shall deliver the required bonds to Owner no later than (10) Ten days after the date of Notice of Intent to Award and no later than the date of execution of the Contract, whichever occurs first. Owner may deem the failure of the Bidder to deliver required bonds within the period of time allowed a default.

2. Section 7.2.3:

   a. Bonds shall be executed and be in force on the date of the execution of the Contract.

1.9 ARTICLE 8 - FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

A. AIA 101 Forms, Owner/Contractor Agreement-Stipulated Sum.

1.10 ARTICLE 9 - EXECUTION OF THE CONTRACT

A. Add Article 9:

1. 9.1.1 - Subsequent to the Notice of Intent to Award, and within 10 days after the prescribed Form of Agreement is presented to the Awardee for signature, the Awardee shall execute and deliver the Agreement to Owner through The Warren Group Architects, Inc, Laura Nassri Warren, AIA/Principal, in such number of counterparts as Owner may require.

2. 9.1.2 - Owner may deem as a default the failure of the Awardee to execute the Contract and to supply the required bonds when the Agreement is presented for signature within the period of time allowed.

3. 9.1.3 - Unless otherwise indicated in the Procurement and Contracting Documents or the executed Agreement, the date of commencement of the Work shall be the date of the executed Agreement or the date that the Bidder is obligated to deliver the executed Agreement.

4. 9.1.4 - In the event of a default, Owner may declare and elect to either award the Contract to the next responsible bidder or re-advertise for bids.

END OF DOCUMENT

DOCUMENT 00 25 13
PREBID MEETING

1.1 PREBID MEETING

A. Owner and Architect, will conduct a Prebid meeting as indicated below:

1. Meeting Date: Thursday, October 4, 2018

2. Meeting Time: 3:00 pm.

3. Location: The Warren Group Architects Inc. Offices, 1801 South 2nd Street, Ste. 330 McAllen, Texas 78503.

B. Attendance:

1. Prime Bidders: Attendance at Prebid meeting is recommended.

2. Subcontractors: Attendance at Prebid meeting is recommended.

C. Bidder Questions: (Request for information, RFI's shall be submitted to Architect. Please follow up with a call to confirm receipt of RFI. RFI's will not be responded to by telephone. NO HAND WRITTEN RFI'S will be responded to. All inquiries shall be forwarded by October 18, 2017. Inquiries beyond this date will not be responded to. Contact project Architect for copies of Addenda..

D. Agenda: Prebid meeting agenda will include review of topics that may affect proper preparation and submittal of bids, including the following:

1. Procurement and Contracting Requirements:

a. Advertisement for Bids.

b. Instructions to Bidders.

c. Insurance.

d. Bid Security.

e. Bid Form and Attachments.

f. Bid Submittal Requirements.

g. Bid Submittal Checklist.

h. Notice of Award.

2. Communication during Bidding Period:
    a. Obtaining documents.
    b. Access to Project Web site.
    c. Bidder's Requests for Information.
    d. Bidder's Substitution Request/Prior Approval Request.
    e. Addenda.
3. Contracting Requirements:
    a. Agreement.
    b. The General Conditions.
    c. The Supplementary Conditions.
    d. Other Owner requirements.
4. Construction Documents:
    a. Scopes of Work.
    b. Temporary Facilities.
    c. Use of Site.
    d. Work Restrictions.
    e. Alternates and Allowances.
    f. Substitutions following award.
5. Separate Contracts:
    a. Work by Owner.
    b. Work of Other Contracts.
6. Schedule:
    a. Project Schedule.
    b. Contract Time.
    c. Liquidated Damages.

d. Other Bidder Questions.

7. Site visit.

8. Post-Meeting Addendum.

E. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes to attendees and others known by the issuing office to have received a complete set of Procurement and Contracting Documents. Minutes of meeting are issued as Available Information and do not constitute a modification to the Procurement and Contracting Documents. Modifications to the Procurement and Contracting Documents are issued by written Addendum only.

1. Sign-in Sheet: Minutes will include list of meeting attendees.

END OF DOCUMENT

DOCUMENT 00 26 00
PROCUREMENT SUBSTITUTION PROCEDURES

1.1 DEFINITIONS

A. Procurement Substitution Requests: Requests for changes in products, materials, equipment, and methods of construction from those indicated in the Procurement and Contracting Documents, submitted prior to receipt of bids.

B. Substitution Requests: Requests for changes in products, materials, equipment, and methods of construction from those indicated in the Contract Documents, submitted following Contract award. See Section 012500 "Substitution Procedures" for conditions under which Substitution requests will be considered following Contract award.

1.2 QUALITY ASSURANCE

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

1.3 PROCUREMENT SUBSTITUTIONS

A. Procurement Substitutions, General: By submitting a bid, the Bidder represents that its bid is based on materials and equipment described in the Procurement and Contracting Documents, including Addenda. Bidders are encouraged to request approval of qualifying substitute materials and equipment when the Specifications Sections list materials and equipment by product or manufacturer name.

B. Procurement Substitution Requests will be received and considered by Owner when the following conditions are satisfied, as determined by Architect; otherwise requests will be returned without action:

1. Extensive revisions to the Contract Documents are not required.

2. Proposed changes are in keeping with the general intent of the Contract Documents, including the level of quality of the Work represented by the requirements therein.

3. The request is fully documented and properly submitted.

1.4 SUBMITTALS

A. Procurement Substitution Request: Submit to The Warren Group Architects, Inc. Procurement Substitution Request must be made in writing by prime contract Bidder only in compliance with the following requirements:

1. Requests for substitution of materials and equipment will be considered if received no later than 3 days prior to date of bid opening.

2. Submittal Format: Submit three copies of each written Procurement Substitution Request CSI Substitution Request Form 1.5C.

3. Submittal Format: Submit Procurement Substitution Request, using format provided on Project Web site.

a. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specifications Sections and drawing numbers.

b. Provide complete documentation on both the product specified and the proposed substitute, including the following information as appropriate:

1) Point-by-point comparison of specified and proposed substitute product data, fabrication drawings, and installation procedures.

2) Copies of current, independent third-party test data of salient product or system characteristics.

3) Samples where applicable or when requested by Architect.

4) Detailed comparison of significant qualities of the proposed substitute with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

5) Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

6) Research reports, where applicable, evidencing compliance with building code in effect for Project, from City Ordinances.

7) 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, which will become necessary to accommodate the proposed substitute.

c. Provide certification by manufacturer that the substitute proposed is equal to or superior to that required by the Procurement and Contracting Documents, and that its in-place performance will be equal to or superior to the product or equipment specified in the application indicated.

d. Bidder, in submitting the Procurement Substitution Request, waives the right to additional payment or an extension of Contract Time because of the failure of the substitute to perform as represented in the Procurement Substitution Request.

B. Architect's Action:

1. Architect may request additional information or documentation necessary for evaluation of the Procurement Substitution Request. Architect will notify all bidders of acceptance of the proposed substitute by means of an Addendum to the Procurement and Contracting Documents.

C. Architect's approval of a substitute during bidding does not relieve Contractor of the responsibility to submit required shop drawings and to comply with all other requirements of the Contract Documents.

END OF DOCUMENT

DOCUMENT 00 41 13
BID FORM - STIPULATED SUM (SINGLE-PRIME CONTRACT)

1.1 BID INFORMATION

A. Bidder: _____.

B. Project Name: Hidalgo County Precinct 4 Memorial Park Phase I.

C. Project Location: 107 Highway and Sunflower Road,
Edinburg, Texas 78589

D. Owner: County of Hidalgo
2802 S. Hwy. Bus. 281
Edinburg, Texas 78539

E. Architect: Laura Nassri Warren, AIA/Principal, The Warren Group Architects, Inc., 1801 S. 2nd Street, Suite 330, McAllen, Texas 78503.

F. Architect Project Number: 1341701.

1.2 CERTIFICATIONS AND BASE BID

A. Base Bid, Single-Prime (All Trades) Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by The Warren Group Architects, Inc. and Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. _____ Dollars

($_____).

2. The above amount may be modified by amounts indicated by the Bidder on the attached Document 004323 "Alternates Form."

1.3 BID GUARANTEE

A. A Bid Bond is required by Owner.

1.4 SUBCONTRACTORS AND SUPPLIERS

A. The following companies shall execute subcontracts for the portions of the Work indicated:

1. General Conditions:

_____.

2. Site Work:

_____.

3. Concrete Work:

_____.

4. Masonry Work:

_____.

5. Structural Steel Work:

_____.

6. Plumbing Work:

_____.

7. Electrical Work:

_____.

8. Miscellaneous Specialties:

_____.

1.5 TIME OF COMPLETION

A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by Architect, and shall fully complete the Work within **150** calendar days.

1.6 ACKNOWLEDGEMENT OF ADDENDA

A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

1. Addendum No. 1, dated _____.
2. Addendum No. 2, dated _____.
3. Addendum No. 3, dated _____.

1.7 BID SUPPLEMENTS

A. The following supplements are a part of this Bid Form and are attached hereto.
1. Bid Form Supplement - Instructions to Bidders (AIA Document A701).
2. Bid Form Supplement - CSI Form 1.5C Substitution Request
3. Bid Form Supplement - Alternates
4. Bid Form Supplement - Allowances

1.8 CONTRACTOR'S LICENSE

A. The undersigned further states that it is a duly licensed contractor, for the type of work proposed, in the State of Texas and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.9 DOCUMENT CONTINUES

1.10 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2018.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title:

_____
(Owner/Partner/President/Vice President)

Witness By: _____
(Handwritten signature)

Attest: _____
(Handwritten signature)

By: _____
(Type or print name)

Title: _____
(Corporate Secretary or Assistant Secretary)

Street Address: _____

City, State, Zip _____

Phone: _____

License No.: _____

Federal ID No.: _____

(Affix Corporate Seal Here)

END OF DOCUMENT

DOCUMENT 00 43 23
ALTERNATES FORM

1.1 BID INFORMATION

A. Bidder: _____.

B. Prime Contract: _____.

C. Project Name: Hidalgo County Precinct 4 Memorial Phark Phase I

D. Project Location: 107 Highway and Sunflower Road, Edinburg, Texas 78539

E. Owner: County of Hidalgo
100 East Cano, 2nd Floor
Edinburg, Texas 78539

F. Architect: Laura Nassri Warren, AIA/Principal, The Warren Group Architects, Inc.,

1801 S. 2nd Street, Suite 330, McAllen, Texas 78503

G. Architect Project Number: 1341701.

1.2 BID FORM SUPPLEMENT

A. This form is required to be attached to the Bid Form.

1.3 DESCRIPTION

A. The undersigned Bidder proposes the amount below be added to or deducted from the Base Bid if particular alternates are accepted by Owner. Amounts listed for each alternate include costs of related coordination, modification, or adjustment.

1. Cost-Plus-Fee Contract: Alternate price given below includes adjustment to Contractor's Fee.

B. If the alternate does not affect the Contract Sum, the Bidder shall indicate "NO CHANGE."

C. If the alternate does not affect the Work of this Contract, the Bidder shall indicate "NOT APPLICABLE."

D. The Bidder shall be responsible for determining from the Contract Documents the affects of each alternate on the Contract Time and the Contract Sum.

E. Owner reserves the right to accept or reject any alternate, in any order, and to award or amend the Contract accordingly within 60 days of the Notice of Award unless otherwise indicated in the Contract Documents.

F. Acceptance or non-acceptance of any alternates by the Owner shall have no affect on the Contract Time unless the "Schedule of Alternates" Article below provides a formatted space for the adjustment of the Contract Time.

1.4 SCHEDULE OF ALTERNATES

A. **Alternate No. 1:** ***General Contractor to provide alternate price for reduce "Sunken Garden" Planter height to 4'-10" above finish floor refer to sheet A1.04.***

1. ADD____ DEDUCT____ NO CHANGE____ NOT APPLICABLE____.

2. _____Dollars

($_____).

3. ADD **30** calendar days to adjust the Contract Time for this alternate.

1.5 SUBMISSION OF BID SUPPLEMENT

Respectfully submitted this ____ day of _____, 2017.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

END OF DOCUMENT

DOCUMENT 00 43 73
PROPOSED SCHEDULE OF VALUES FORM

1.1 BID FORM SUPPLEMENT

A. A completed Proposed Schedule of Values form is required to be attached to the Bid Form.

1.2 PROPOSED SCHEDULE OF VALUES FORM

A. Proposed Schedule of Values Form: Provide a breakdown of the bid amount, including alternates, in enough detail to facilitate continued evaluation of bid. Coordinate with the Project Manual table of contents. Provide multiple line items for principal material and subcontract amounts in excess of five percent of the Contract Sum.

B. General Contractor is to provide a cost breakdown on their own company format to include the following divisions:

01. General Conditions
02. Site Work
03. Concrete
04. Masonry
05. Structural Steel
06. Plumbing
07. Electrical
08. Miscellaneous/Specialties

A more detailed cost breakdown will be requested from the awarded Bidder as part of the Contract review procedures.

C. Arrange schedule of values consistent with format of AIA Document G703 Continuation Sheet.

1. Copies of AIA standard forms may be obtained from the American Institute of Architects; http://www.aia.org/contractdocs/purchase/index.htm; docspurchases@aia.org; (800) 942-7732.

END OF DOCUMENT

SECTION 00 60 00
FORMS

1.1 1.1 FORM OF AGREEMENT AND GENERAL CONDITIONS

A. The following form of Owner/Contractor Agreement and form of the General Conditions shall be used for Project:

1. AIA Document A101, "Standard Form of Agreement between Owner and Contractor,Stipulated Sum."

a. The General Conditions for Project are AIA Document A201, "General Conditions of the Contract for Construction."

2. The General Conditions are included in the Project Manual.

3. The Supplementary Conditions for Project are separately prepared and included in the Project Manual.

4. Owner's document(s) bound following this Document.

1.2 ADMINISTRATIVE FORMS

A. Administrative Forms: Additional administrative forms are specified in Division 01 General Requirements.

B. Copies of AIA standard forms may be obtained from the American Institute of Architects; http://www.aia.org/contractdocs/purchase/index.htm; docspurchases@aia.org; (800) 942-7732.

C. Preconstruction Forms:

1. Form of Performance Bond and Labor and Material Bond: AIA Document A312, "Performance Bond and Payment Bond."

2. Form of Certificate of Insurance: AIA Document G715, "Supplemental Attachment for ACORD Certificate of Insurance 25-S."

D. Information and Modification Forms:

1. Form for Requests for Information (RFIs): AIA Document G716, "Request for Information (RFI)."

2. Form of Request for Proposal: AIA Document G709, "Work Changes Proposal Request."

3. Change Order Form: AIA Document G701, "Change Order."

4. Form of Architect's Memorandum for Minor Changes in the Work: AIA Document G707, "Architect's Supplemental Instructions."

5. Form of Change Directive: AIA Document G714, "Construction Change Directive."

E. Payment Forms:

1. Schedule of Values Form: AIA Document G703, "Continuation Sheet."

2. Payment Application: AIA Document G702/703, "Application and Certificate for Payment and Continuation Sheet."

3. Form of Contractor's Affidavit: AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."

4. Form of Affidavit of Release of Liens: AIA Document G706A, "Contractor's Affidavit of Payment of Release of Liens."

5. Form of Consent of Surety: AIA Document G707, "Consent of Surety to Final Payment."

END OF DOCUMENT

SECTION 00 72 00
GENERAL CONDITIONS NOTICE

1.01 FORM OF GENERAL CONDITIONS

A. The “General Conditions of the Contract for Construction”, American Institute of Architects’ A.I.A. Document A201, Latest Edition, and “Supplementary Conditions” on file in the offices of the Architect and the Owner’s Supervising Engineer, are hereby a part of these Specifications, and shall apply and be binding to all Contractors as though written in full herein.

B. The Contractors shall be held to have examined and become familiar with all provisions of the above referenced documents.

C. Certain provisions of these standard “General Conditions of the Contract for Construction” have been revised or modified by portions of this “NOTICE” and the “SUPPLEMENTARY CONDITIONS”. In all such cases, the provisions of the “NOTICE” and the “SUPPLEMENTARY CONDITIONS” shall take precedence, to the extent of any conflict or inconsistency, over these standard “General Conditions of the Contract for Construction”.

D. Wherever the word “Owner” appears in such “General Conditions”, and elsewhere in these documents, it shall be interpreted as “County of Hidalgo”, so that the word “Board” is hereby substituted for the word “Owner” throughout these documents.

E. Wherever the word “Contractor” or “Subcontractor” appears in these documents, it shall be interpreted to mean the Contractor who’s Proposal has been accepted for that respective Section of the Work.

1.02 SUPPLEMENTARY CONDITIONS

A. Refer to Section 00 73 00 for amendments to these General Conditions.

END OF SECTION

SECTION 00 73 00
SUPPLEMENTARY CONDITIONS

ARTICLE 1 - GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

The Agreement takes precedence over all other Contract Documents.

1.2 EXECUTION, CORRELATION AND INTENT

No allowance shall subsequently be made on behalf of the Contractor on account of an error on his part or his negligence or failure to acquaint himself with the conditions of the site.

1.2.2.1 Before submitting proposal for this work, each bidder shall be held responsible for having examined the premises and satisfied himself as to the existing conditions under which he will be obliged to operate and that will, in any manner, affect the work under this Contract. No allowance shall be made subsequently in the connection on behalf of the contractor for any error or negligence on his part, nor for slight discrepancies on drawings as to grades, slopes and elevations.

1.2.2.2 In case the bidder finds any discrepancy between the conditions at the site and the requirements of these plans and specifications, he shall notify the Owner in writing before the opening of bids and the Owner will issue the necessary instructions to all bidders.

1.2.2.2.1 In the event of inconsistencies within or between parts of the Contract Documents, or between the Contract Documents and applicable standards, codes, and ordinances, the Contractor shall (1) provide the better quality or greater quantity of Work or (2) comply with the more stringent requirement; either or both in accordance with the Architect's reasonable interpretation. The terms and conditions of this paragraph 1.2.3, however, shall not relieve the Contractor of any obligations set forth in Paragraphs 3.2 and 3.7. Before ordering any materials or doing any Work, the Contractor and each Subcontractor shall verify measurements at the Project site and shall be responsible for the correctness of such measurements. Any difference, which may be found, shall be submitted to the Architect for resolution before proceeding with the Work.

Add the following to Paragraph 1.2.4:

Such separations shall not operate to make the Architect an arbiter to establish subcontract limits.

Add the following after Paragraph 1.2.5:

1.2.6 Titles of Sections and Articles in these Specifications are introduced merely for convenience and are not to be construed as a correct or complete segregation or tabulation of the various units of material and/or work. The Contractor shall be solely responsible for omissions or duplications by the Contractor or any

Subcontractors due to real or alleged error, either direct or implied, in arrangement of matter in the Contract Documents.

1.2.7 Contractor shall check Drawings and Specifications immediately upon their receipt, and shall notify Architect in writing not later than ten (10) days after receipt of them, of errors, discrepancies, or omissions. Contractor shall verify dimensions and details before ordering materials for laying out work and shall be responsible for errors that might have been avoided by such check. Deviations from Drawings and dimensions shall be made only with the Architect's permission. No exchange or compensation will be allowed on account of differences between actual dimensions and measurements indicated on the Drawings. Any difference, which may be found, shall be submitted to the Architect for instructions before proceeding with the work.

1.2.8 Specifications and Drawings are intended to be complementary and in agreement each with the other. All work or materials called for by either shall be Performed and/or furnished as if called for by both. In cases of discrepancy concerning dimensions, quantities, and location, the contractor shall, in writing, call to the attention of the Architect any discrepancies between Specifications, Plans, Details or Schedules. The Architect will then inform the Contractor, in writing, which document takes precedence. Should the Contractor not notify the Architect as per the prior instructions, the greater amount of work, cost and/or materials shall be included in the base bid or alternate bid amount as part of this agreement.

1.2.9 These Specifications are intended to supplement the Drawings, the two being considered cooperative and, therefore, it will not be the province of these Specifications to mention any portion of the construction which the Drawings are competent to explain, and such omission will not relieve the Contractor from carrying out such portions as are only indicated from the Drawings, and should items be required by these Specifications which are not indicated on the Drawings, they are to be supplied.

1.2.10 The Contractor shall supply all labor, materials, transportation, apparatus, light, energy, scaffolding and tools necessary for the entire proper completion of the Work.

1.2.11 Unless specified otherwise, all of the materials incorporated in the work shall be new and of the best of the kind of grades specified and all workmanship be up to the best recognized standard known to the various trades.

1.3.1 The Drawings, Specifications, and other similar or related documents and copies thereof are furnished to the Contractor for the purpose of performing the Work and are, and shall remain, the property of the Architect.

ARTICLE 2 - OWNER

2.2 INFORMATION AND SERVICE REQUIRED OF THE OWNER

A. Architect will furnish Contractor Online Procurement and Contracting Documents: Contact Natanael Perez at nperez@twgarch.com for a download link. Any other questions to be in written/e-mailed format to the attention of Laura Nassri Warren at lwarren@twgarch.com and a copy to Andrina De Anda at andrina@twgarch.com. Online access will be provided to prime bidders only. A hard copy of the Construction Documents and any Addendums can be purchased at RGV Reprographics, Inc., 956-686-1525, located at 519 S Broadway St, McAllen, TX 78501. Please note the Notices of Addendums are to be issued digitally.

B.

2.2.7 OWNER'S RIGHT TO SEPARATE CONTRACT

Although it is contemplated that this Contract shall include all of the work intended to be done at this time, it is possible that the Owner may let other Contract in connection with the work herein specified. In any event, the Owner reserves the right to do so, in which case the Contractor shall afford reasonable opportunity for the storage of materials and the execution of work by others.

ARTICLE 3 - CONTRACTOR

3.2 VIEW OF CONTRACT DOCUMENTS

3.2.1 Contractor shall carefully study and compare the Agreement, Conditions of the Contract, Drawings, Specifications, Addenda and Modifications and shall at once report, in writing, to the Architect any error, inconsistency or omission he may discover. Contractor shall be liable for any damage to Owner for failure to so report any error, inconsistency or omission he may discover or should have discovered, but he shall not be liable to Owner or Architect for any damage resulting from any such error, inconsistency or omission he should not have discovered or which he did discover and at once so reported. Contractor shall do no work without approved Drawings and Specifications.

3.2.4 Should the Specifications and Drawings fail to particularly describe the material or kind of goods to be used in any place, then it shall be the duty of the Contractor to make inquiry of the Architect as to what is best-suited. The material that would normally be used in this place to produce first quality finished Work shall be considered a part of the Contract.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.5 In laying out the work, the Contractor shall verify all measurements and dimensions and shall immediately report any errors to the Architect. The Contractor shall employ an experienced and competent instrument person to lay out the structure and establish a permanent and accessible bench mark from which the grades may be established and checked from time to time during the progress of the work. Contractors shall lay out building corners accurately and secure approval of the Architect before proceeding with excavation.

3.4 LABOR AND MATERIALS

3.4.1.1 Not later than ten (10) days from the Contract Date, the Contractor shall provide a list of the names of the manufacturers proposed to be used for each of the following products listed in the Instruction to Bidders and, where applicable, the name of the installing subcontractor. The Architect will promptly reply in writing to the Contractor stating whether the Owner or the Architect have any reasonable objection to any such proposal. If adequate data on any proposed manufacturer or installer is not available, the Architect may state that action will be deferred until the Contractor provides further data. Failure of the Owner or the Architect to reply promptly shall not constitute a waiver of any of the requirements of the Contract Documents and all products furnished by the listed manufacturer must conform thereto.

3.4.1.2 Products are generally specified by ASTM and other reference standard, and/or by manufacturer's name and model number or trade name. When specified only by reference standard, the Contractor may select any product meeting this standard, by any manufacturer. When several products or manufacturers are specified as being equally acceptable, the Contractor has the option of using any product and manufacturer combination listed, but may not substitute others except as provided in Paragraph 4.4.1.3 below. When only one product and manufacturer is Specified, this is the basis of the Contract, without substitution or exception.

3.4.1.3 After the Contract has been executed, the Owner and Architect will consider a formal request for the substitution of products in place of those specified, under the following conditions:

The request complies with requirements of Section 01 25 00 and additionally complies with the following:

The request is accompanied by complete data on the proposed substitution substantiating compliance with the Contract Documents including product identification and description, performance and test data, references and samples where applicable, and an itemized comparison of the proposed substitution with the products specified with data relating to Contract time schedule, design and artistic effect where applicable, and its relationship to any separate contracts."

The request is accompanied by accurate cost data on the proposed substitution with the product specified, whether or not modification of the Contract sum is to be a consideration.

3.4.1.4 By making requests for substitutions based on Paragraph 3.4.1.3 above, when forwarded by the Contractor to the Architect, the Contractor:

Represents that he has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified. Will provide the same guarantee for the substitution that he would for that specified.

Certifies that the cost data presented is complete and includes all related costs under this Contract, but excludes costs under any separate contracts and the

Architect's redesign costs, and that he waives all claims for additional costs related to the substitution which subsequently become apparent.

Will coordinate the installation of the accepted substitute, making such changes as may be required for the work to be complete in all respects.

States that the proposed substitution is in full compliance with the Contract Documents and applicable codes.

Will provide a list of other trades, (if any), which may be affected by the substitution. Shall be responsible for any effect upon related work in the Project of any substitution and shall pay any additional costs generated by any substitutions.

3.4.1.5 Substitutions will not be considered if:

They are indicated or implied on Shop Drawings, Product Data or Sample submissions without the formal request required in paragraph 3.4.1.3 above.

For their implementation, they require a substantial revision of the Contract Documents or work of the owner or separate Contractors in order to accommodate their use.

3.4.4 After the Contract has been executed, the owner and the Architect will consider a formal request for the substitution of products in place of those specified only under the conditions set forth herein and in the Contract Documents. By making request for substitution, the Contractor (a) represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified; (b) represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified; (c) certifies that the cost data presented is complete and includes all related costs under this Contract but excludes cost under separate contracts and excludes the Architect's redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent; and (d) will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

3.5 WARRANTY

3.5.2 Guarantees:

Contractor shall guarantee all work performed under this Contract as specified, delivering written guarantees to Owner, through Architect, upon completion in accordance with Section 01 70 00.

For the convenience of the General Contractor, the following is a summary including, but not limited to, releases, warranties, and the guarantees mentioned in the various Section of these Specifications to be furnished to the Owner, through the Architect, upon completion of the Project. Where the requirements listed herein conflict with those in the various sections of these Specifications, the stricter requirements will take precedence.

General Contractor's notarized affidavit that all bills for labor and materials have been paid in full.

General Contractor's guarantee for ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THE WORK against defective materials and/or workmanship.

Roofing subcontractor shall furnish a TEN YEAR written certificate guaranteeing that all roofing materials are installed in accordance with Plans and specifications, that all roofing work is free from faulty 'materials and workmanship, that pitch will not leak or drip or stain any part of the building, and providing for repair and replacement of any faulty materials and/or workmanship.

The Flashing subcontractor's guarantee for a period of FIVE YEARS against defective materials and/or workmanship.

Caulking subcontractor's guarantee for a period of TWO YEARS from the date of final acceptance of the work.

Electrical subcontractor's guarantee for a period of ONE YEAR from time his work is accepted, against defective materials and/or workmanship.

All other guarantees not listed above but specified in the technical portion of the Specifications shall be furnished to the Owner upon completion of the Project.

3.5.3 Without limiting any other warranty, the Contractor shall warrant for a period of twelve (12) months that the buildings shall be watertight and leak proof at every point and in every area, except where leaks can be attributed to damage to the building by external forces beyond Contractor's control. The Contractor shall, immediately upon notification by the Owner of water penetration, determine the source of water penetration and, at its own expense, do any work necessary to make the building watertight. Contractor shall also, at its own expense, repair or replace any other damaged material, finishes, and furnishings, damaged as a result of this water penetration, to return the building to its original condition.

ARTICLE 3.6 - TAXES

3.6.2 County is exempt from Federal Excise Tax, State Tax and Local Tax. Do Not include tax in cost figure. If it is determined that tax was included in the cost figures it will not be included in the tabulation of any awards. Tax exemption certificates will be furnished upon request.

3.7 - PERMITS, FEES AND NOTICES

3.7.5 Upon completion of the work, Contractor shall deliver to the owner through the Architect, all required Certificates of Inspection.

3.7.6 Any reference in the Specifications text to codes, standard specifications or manufacturer's instructions shall mean the latest printed edition of each in effect at the contract date.

3.9 - SUPERINTENDENT

3.9.1 Contractor and his prime subcontractors shall employ competent superintendents and necessary assistants who shall be in attendance at the Project site during the progress of the work. The superintendents shall be satisfactory to the Architect and shall not be changed except with the consent of the Architect, unless the superintendents leave the employ of the Contractor or the prime subcontractor.

3.9.2 At the beginning of Project, Contractor shall submit, in writing, to the Architect the name of his superintendent and the names of the superintendents of his prime subcontractors, this to include a list of past projects on which each superintendent has worked or been in charge of.

3.9.3 Superintendents shall not be removed from the Project by Contractor or his prime subcontractor without written requests and approval by the Architect.

3.9.4 Superintendent shall represent Contractor and all communications given superintendent shall be as binding as if given Contractor. Important communications will be confirmed in writing. Other communications will be so confirmed on written request in each case.

3.10 CONTRACTOR'S CONSTRUCTION SCHEDULE

3.10.3 The progress schedule shall be of a type similar to the CPM, PERT, DYliA-PERT schedules or their equivalent in the opinion of the Architect. The number of activities and structure of the progress schedule shall be adequate to explain the various stages of construction. Completed progress schedule shall be submitted to Architect no later than thirty (30) calendar days after date of Agreement and shall be updated during construction as required to keep it current. Nothing in this requirement shall be deemed to be usurpation of the Contractor's authority and responsibility to plan and schedule the work as he sees fit, subject to all other requirements of the Contract Documents.

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.12.11 Submission of Shop Drawings and Samples to Architect required for ONLY those times specifically mentioned in the Specification Sections. If Contractor submits Shop Drawings for items other than the above, Architect will not be obliged to review them. Contractor shall be responsible or procuring Shop Drawings for his own use as he may require for the progress of the work.

3.12.12 The term "shop drawing" as used herein also includes, but is not limited to, fabrication, erection, layout and setting drawings, manufacturer's standard drawings, descriptive literature, catalogues, brochures, performance and test data, wiring and control diagrams, all other drawings and descriptive data pertaining to materials, equipment or systems and the position thereof conforms to the Contract requirements. As used herein, the term "manufactured" applied to standard units usually mass produced; and "fabricate" means items specifically assemble or made out of selected materials to meet individual design requirements. Shop Drawings shall establish the actual detail of all manufactured or fabricated items; indicate proper relation to adjoining work; amplify design details or mechanical and electrical equipment in proper relation to physical spaces in the structure; and incorporate minor changes of design or construction to suit actual conditions.

3.12.13 Following Contractor's review and approval, he shall submit to the Architect shop drawings and submittals in the quantities listed in Section 01300. Architect, at Owner's expense, will make prints for himself, Owner and Project Representative and then return the reproducible copy to Contractor in order that as many additional prints may be made, at Contractor's expense, as he may require for the remaining parties concerned.

3.12.14 Manufacturers instructions: Where any item of work is required by specification to be furnished, installed or performed in accordance with a specified product manufacturer's instructions, contractor shall procure and distribute the necessary copies of such instructions to all concerned parties.

3.12.15 Materials in the Specifications may be followed by the words "or as approved by the Architect". In these cases, wherever the name or brand of a manufacturer's article is specified, it is used as a measure of quality and utility or a standard. If Contractor desires to use any other brand or manufacturer of same quality, appearance and utility to that specified, he shall request substitution as provided in paragraph 4.4.

3.13 USE OF THE SITE

3.13.2 The Contractor shall arrange and maintain material and equipment in orderly manner keeping walks, drives, roads and entrances unencumbered.

3.15 CLEANING UP

3.15.3 Besides the "broom cleaning", the following special cleaning is required just prior to acceptance:
Remove stains; wash and polish glass, inside and outside. This work shall be done by persons skilled and equipped for such work.

Remove foreign matter, marks, stains, foreign paint, fingerprints, soil and dirt from (and have in a polished condition where appropriate) the following:
Painted, decorated and stained work.

All hardware, fixtures and incorporated equipment.

All finished surface and metal surfaces, whether interior or exterior.

All doors and windows.

3.15.4 In addition to clean-up provisions of the Specifications, Contractor shall take appropriate steps to prevent air-borne dust due to work under this contract. Water shall be applied wherever practical to settle and hold dust to a minimum, particularly during the excavation and moving of materials.

3.18 INDEMNIFICATION

3.18.3 The obligations of the Contractor under this paragraph 3.18.3 shall not extend to the liability of the Architect, his agents or employees arising out of (1) the preparation of approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications or (2) the giving of direction or instructions by the Architect, his agents or employees provided such giving is the primary cause of the injury or damage.

ARTICLE 4 - ADMINISTRATION OF THE CONTRACT

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

The term 'aesthetic effect' as used herein refers to color, texture, profile and juxtaposition of masses. The Architect shall be the sole interpreter of the design intent with respect to such matters, but the Architect's authority with respect thereto shall not contravene any other rights of either the Owner or the Contractor ascribed to them by other provisions of the Contract.

ARTICLE 5 - SUBCONTRACTORS

5.5 No subcontractor shall be let until the list of proposed subcontractors as submitted at the bid opening is approved, in writing, by the Owner.

5.6 The General Contractor shall bind all Subcontractors, the Mechanical Contractor and the Electrical Contractor to the terms of the Contract Documents.

5.7 The General Contractor agrees that he is as fully responsible to the Owner or the acts and omissions of his Subcontractors and of persons either directly or indirectly employed by them as he is for the acts and omissions of persons directly employed by him.

5.8 Nothing contained in the Contract Documents shall create any contractual relations between any Subcontractor and the owner.

ARTICLE 6 - CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.2 MUTUAL RESPONSIBILITY

6.2.7 Contractor shall be responsible for the proper fitting of all work and for the coordination of the operations of the trades, other contractors, subcontractors, and material suppliers engaged upon or in connection with the work as well as those of his own employees, and he shall exercise every effort to assure a harmonious cooperative working relationship on the part of all concerned. He shall be prepared to guarantee to each of his subcontractors and foremen all of the dimensions which they may require for the fitting of their own to adjoining work and shall do or shall cause his agents to do, all fitting and adjusting necessary to make the several parts of the work come together properly and fit the work to receive or be received by, the work of other Contractors.

ARTICLE 7 - CHANGES IN THE WORK

7.2 CHANGE ORDERS

7.2.2 Any adjustment to contract sum shall be determined by methods described in 7.3.3, 7.3.10 and 7.3.11.

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.3.5 In subparagraphs 7.3.3.1 and 7.3.3.3 the allowance for overhead and profit combined, included in the total cost to the Owner shall be based on the schedule in the Bid Form.

7.3.6 In allowance for overhead and profit in accordance with the schedule the Contractor is to provide – “In the Bid Form.”

7.3.10 Cost to which overhead and profit is to be applied shall be determined in accordance with subparagraph 7.3.6.

7.3.11 In order to facilitate checking of quotations for extras or credit, all proposals, except those so minor that their property can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and subcontractors. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are subcontracts, they shall be itemized also. In no case will a change involving over $100.00 be approved without such itemization. Every change itemization shall be submitted on attached Change in work/Cost Analysis forms.

ARTICLE 8 - TIME

8.1 DEFINITIONS

8.1.5 Contract Time commences at the time of Notice to Proceed.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.4 Contractor shall have all materials delivered at the site in such quantities as required for the uninterrupted progress of the work and the least obstruction of the premises and the adjoining property. No extension of time or extra cost will be allowed for failure by Contractor to order the material on time or in insufficient quantities.

WEATHER DELAY

8.3.5 For the purpose of calculating extensions of time due to inclement weather, the attached local climatological data will be used.

8.3.6 Unless the Owner considers that unusual circumstances warrant consideration, extensions of time because of inclement weather will be granted for any work only to the extent that the number of days of precipitation (.04" or more) and/or the number of days of freezing weather (32 degrees and below) exceeds the mean for that month; provided that no one day will be counted more than once; and provided further, that if a day lost because of weather falls immediately before a non working day or days, such as a holiday or weekend, such working days shall

be considered as lost time. The mean number of days of Precipitation and freezing weather shall be established by the tabulation of normals, means and extremes published by National Oceanic and Atmospheric Administration in the most recent Local Climatological Data for the closest reporting station to the site of the work. No claim will be considered unless it is accompanied by the attached "Time Extension Request" form completed within two weeks of the time referenced inclement period.

LIQUIDATED DAMAGES

For each day after Substantial Completion that the work remains incomplete, a penalty of $1,000.00 per day will be charged to the Contractor.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

9.1.2 All costs of overtime work require by the nature of this work, except emergencies as covered in Article 10.3.1 shall be included in the Bid.

9.3 APPLICATIONS FOR PAYMENTS

9.3.1 In each Application for Payment, the Contractor shall certify that such Application for Payment represents a just estimate of cost reimbursable to the Contractor and also shall certify as follows:

(a) There are no known mechanic's or materialmen's liens outstanding at the date of this requisition, that all due and payable bills with respect to the Work have been paid to date or are included in the amount requested in the current application, and that, except for such bills not paid but so included, there is no known basis for the filing of any mechanic's or materialmen's liens on the Work, and that waivers from all Subcontractors and materialmen's have been obtained in such form as to constitute an effective waiver of lien under the laws of the location of the Project.

(b) The Contractor shall within thirty (30) days of receipt of notice of the existence of any lien filed against the Project by any subcontractor, supplier of materials or any other person or entity claiming to be a creditor of the Contractor, cause the same to be removed as of record or provide a bond to indemnify or a cash deposit to the Title Company in an amount equal to the lien.

9.3.1.3 Along with the Progress Schedule, specified herein before, Contractor shall submit to Architect a schedule of the anticipated amount of each monthly payment that will become due the Contractor in accordance with the Progress Schedule. On or about the tenth of each month, the Owner agrees to pay to the Contractor an amount to be determined by taking ninety percent (90%) of the value of labor and materials incorporated in the work, plus material not incorporated in the work, but approved by the Architect under the provisions of the Contract Documents, up to the date of payment proposed to be made, less the aggregate of all previous payments and deductions provided for in the Contract Documents.

The ten percent (10%) retention shall be paid thirty-five (35) calendar days after the date of recording by the Owner of the Notice Completion of all the work to be done under this contract, providing there are no undercharged or unsecured liens, attachments or claims in connection with the work.

9.3.2 Payments made on account of materials not incorporated in the work shall only be made on material which has been worked to a special design according to the Drawings and specifications. No payment shall be made on standard manufactured items. The Architect's decision as to which category a specific item qualifies under shall be final.

9.8 SUBSTANTIAL COMPLETION

9.8.1 Substantial Completion. to City of Edinburg, Texas.

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.8 Protection of Plant Life: Solvents, oils and any other material which may be harmful to plant life shall be disposed of in containers as directed by the Architect and removed from the site. At completion of work, any contaminated soil shall be removed and replaced with good soil by this Contractor at no expense to the Owner.

10.2.9 The Contractor shall secure and pay for all necessary permits and shall comply with all ordinances pertaining to his work. He shall provide and maintain suitable temporary walkways, where needed, fences and other structures required by law and city ordinances in such a manner as not to interfere with traffic in public streets. He shall leave access to fire hydrants and protect the public and adjacent property at all times during the progress of the Contract. The proper signs shall be posted at truck entrances, and all other possible safety precautions observed.

10.2.10 The Contractor shall, as a cost of the Work, provide and maintain in good order, any firefighting equipment required by local authorities during Contract operations.

10.2.11 The Contractor shall immediately report to the Owner all accidents arising out of the Work and involving injury to employees of the Contractor, any member of the public or property damage to the property. The Owner's liability insurance will not be responsible for claims, accidents and losses arising out of the Contractor's operations.

ARTICLE 11 - INSURANCE AND BONDS

11.1 CONTRACTORS LIABILITY INSURANCE

11.1.1.8 The liability insurance required shall be on a comprehensive basis, including:

Premises - Operations

Independent Contractor's Protective

Products and Completed Operations.

Add the following to Paragraph 11.1.2:

1. Workmen's Compensation - Statutory
   Employer's Liability - $100,000 per occurrence.

2. Comprehensive General Liability (Public Liability)

   a. Bodily injury - $ 1,000,000 each occurrence.

   b. Personal injury - $ 1,000,000 each person,
   $ 1,000,000 aggregate.

   c. Property damage - $ 1,000,000 each person,
   $ 1,000,000 each occurrence,
   $ 1,000,000 aggregate.

3. Automobile Liability:

   a. Bodily injury - $ 1,000,000 each person,
   $ 1,000,000 each occurrence,

   b. Property damage - $ 1,000,000 each occurrence.

4. Independent Contractors: Same limits as above.

5. Products and Completed Operations: same limits as above for one year, commencing with issuance of the Final Certificate for Payment.

6. Contractual Liability: Same limits as above.

7. Umbrella Liability: Excess over underlying limits above $ 1,000,000.

8. Builder's All Risk: The Contractor shall provide and maintain Builder's All Risk Insurance with minimum coverage consisting of fire, extended coverage, vandalism and malicious protection sufficient to amply indemnify himself, the Owner and the Architect against loss or damage that may occur to the premises and improvements supplied by the Contractor until final completion and acceptance by the Owner.

11.1.3.1 Furnish one copy of the Certificates herein required for each copy of the Agreement; specifically set forth evidence of all coverage required by paragraphs 11.1.1 and 11.1.2. The form of the Certificate shall be AIA Document G705.

Furnish the owner copies of any endorsements that are subsequently issued amending.

11.4 PERFORMANCE BOND AND PAYMENT BOND

Both a Performance Bond and a Payment Bond will be required, each in an amount equal to 100 percent of the Contract Sum.

ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK

12.2 CORRECTION OF WORK

Add the following to Paragraph 12.2.2:

The above stated ONE YEAR guarantee by the General Contractor may be extended to longer periods if stated in the Specific Section of the Specifications".

Substitute "Date of Final Acceptance of the Project" in lieu of "Date of Substantial Completion" or "Substantial Completion". The date of Final Acceptance shall be the date of the Final Application of Payment is approved by the Architect.

12.3 ACCEPTANCE OF DEFECTIVE OR NON-CONFORMING WORK

Add the following after Paragraph 12.3.1:

"Appropriate reduction" is hereby defined as an amount equal to the entire cost of replacing the work to make it as originally shown or specified.

ARTICLE 13 - MISCELLANEOUS PROVISIONS

13.1 AHERA

Pursuant to Federal Public Law 99-519, otherwise known as the Asbestos Hazard Emergency Response Act (AHERA) there shall be no asbestos containing products and/or materials used in this project.

OTHER CONDITIONS OR PROVISIONS

Contractor understands and agrees that time is of the essence hereof and in order to comply with Article 3 and meet all applicable completion dates, Contractor warrants and represents that Contractor will undertake proper coordination of the Work so as to not interfere, disrupt, delay or adversely affect in any way the on-going business functions and operations of the owner. Contractor understands and agrees that in order to comply herewith, it may be necessary for work to continue under this Contract on holidays, weekends and other calendar days on which Work is not ordinarily performed; cost of which shall be by the Contractor.

All risk insurance described in Article 11, Section 11.3.1.1 shall be purchased and carried by the contractor. The additional cost for this insurance will be paid by the Owner.

The term Products is utilized throughout this Specification Manual to encompass the many other words often used in specifications they are defined in the paragraph below:

1. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.

2. Furnish or Supply: To supply and deliver, unload, inspect for damage.

3. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, and ready for use.

4. Provide: To furnish or supply, plus install.

END OF DOCUMENT

SECTION 01 01 00
GENERAL SCOPE OF WORK

The requirements of the “General Conditions”, the “Supplementary Conditions”, and “Division 1” sections of the Specifications, shall apply to this section of the Specifications.

PART 1 - GENERAL

1.01 SCOPE

A. Work Included: The Project generally consists of, but is not necessarily limited to, the following:

1. Project consists of the design of Memorial Park, Phase I as follows:
Approximate Gross Area of 16.83 acres

1. Site Work as noted in the Construction Documents.

B. Work Not Included, must meet Requirements:

1. Furnishings.

2. All Items Noted “N.I.C.” (Not In Contract) on Drawings.

1.02 CONTRACT DOCUMENTS

A. Requirements for all Work shall be executed in strict accordance with the following:

1. The Contract.

2. The Drawings.

3. The Approved Shop Drawings.

4. The General Conditions and Supplementary General Conditions.

5. The Specifications, Addenda and Bulletins.

6. The Change Orders and Directives received from the Owner and/or Architect.

7. Warranties and Guarantees in accordance with requirements of the Contract Documents, with period of Warranty as stated therein; except if Contractor neglects to correct or complete Work in Punch Lists during period of Warranty and/or Guaranty, Contractor is still responsible and required to do so after expiration dates of Warranty or Guaranty until the corrective Work is completed and accepted by the Owner.

8. The governing Building Code, all governing laws, ordinances, rules, permits, regulations and directives from governing authorities having jurisdiction over this Work.

9. The approved Construction Time and Sequence Schedule.

10. Cooperation with other Contractors employed on the Project by the Owner under separate contracts. Cooperation shall include, but not be limited to, written notices to others when required to implement proper coordination of the Work and to maintain the Construction Time and Sequence Schedule.

B. Intent of Contract Documents: Work not particularly detailed, marked, or specified shall be the same as similar parts that are detailed, marked, or specified. Should an error occur in the Specifications or Drawings, or in Work by others affecting this Work, the Contractor shall at once notify the Architect who will issue instructions as to procedure. If the Contractor proceeds with the Work based on such an error without instructions from the Owner, the Contractor shall make good any resulting damage or defects. This includes Specification typographical errors and Drawing notational errors where the intent is doubtful.

C. Conflicts: In the event of a conflict or need for interpretation between the Working Drawings and Specifications, the Architect shall be the sole interpreter of the Drawings and Specifications, to determine which, if any will take precedence.

D. Requirements of Regulatory Agencies: Furnish and install materials in strict compliance with the laws, codes, ordinances and regulations of the public authorities having jurisdiction over this Project, including “ICC/ANSI - A117.1 - Standard for Accessible and Usable Buildings and Facilities” and “Title III of The Americans with Disabilities Act (ADA), Public Law 101-336”.

1.03 QUALITY ASSURANCE

A. Standards: All exterior building materials and systems shall meet local building code requirements for fire spread, uplift resistance, and wind loads.

1.04 PROHIBITED SUSPENSION OF MATERIALS FROM METAL DECK

A. Suspension of any material or equipment from metal deck is strictly prohibited. Items not allowed to be attached to or suspended from the metal deck include but are not limited to mechanical or electrical equipment, ducts, piping, light fixtures, or other decorative structures.

1.05 HAZARDOUS MATERIALS

A. The building shall be free of hazardous materials according to applicable federal, state, and local environmental regulations.

1.06 ASBESTOS FREE MATERIALS

A. No asbestos, or products containing asbestos, shall be installed in this Project. General Contractor shall provide to the Owner at completion of construction, an affidavit certifying that the Project is free of all asbestos - containing materials.

1.07 ACCESS TO SITE

A. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1.08 WORK RESTRICTIONS

A. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor air intakes.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 15 00
CONTRACT STANDARDS AND PROCEDURES

The requirements of the “General Conditions”, the “Supplementary Conditions”, and “Division 1” sections of the Specifications, shall apply to this section of the Specifications.

PART 1 - GENERAL

1.01 SCOPE

A. Work Included: This section consists of establishing standards and procedures.

1.02 OPERATIONS

A. Layout: Locate and layout the Work, and establish lines and levels accurately. Report any discrepancies to the Architect immediately upon discovery.

B. Use of Premises: Confine apparatus, storage of materials, and operations of workmen to limits indicated by law, ordinance, permit, or arrangement with the Owner. Do not unreasonably encumber the premises with materials.

C. Project Meetings:

1. Progress Meetings: Schedule and conduct regular periodic progress meetings. All Key personnel of contractor and subcontractors shall attend. Notify other parties as the Owner’s Representative or Architect might designate, as job conditions and progress might warrant.

a. Contractor’s Construction Schedule: Review progress since last meeting, determine whether each activity is on time, ahead schedule, or behind schedule, in relation to the 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 correct and subsequent activities will be completed within Contract Time.

1) Review schedule for next scheduled progress meeting period.

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

1) Interface requirement.

2) Sequence of operations.

3) Status of submittals.

4) Deliveries.

5) Off-site fabrication.

6) Access and site utilization.

7) Temporary facilities and controls.

8) Progress Cleaning

9) Quality and work standards

10) Status of correction of deficient items.

11) Field observations.

12) Status of RFIs.

13) Status of proposal requests.

14) Pending changes and Status of Change Orders.

15) Pending claims and disputes.

16) Documentation of information for payment requests.

c. Meeting Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

2. Pre-construction Meeting: Schedule and conduct a preconstruction meeting before starting construction, at a time convenient to Owner and Architect, but no later than 10 days after execution of the Agreement. All Key personnel of owner, design professionals and contractors shall attend. Notify other parties as the Owner's Representative or Architect might designate, as job conditions and progress might warrant.

a. Agenda: Discuss items of significance that could affect progress, including the following:

1) Tentative construction schedule.

2) Phasing and Staging.

3) Critical work sequencing and long-lead items.

4) Designation of key personnel and their duties.

5) Lines of communications.

6) Procedures for processing field decisions and Change Orders.

7) Procedures for RFIs.

8) Procedures for testing and inspecting.

9) Procedures for processing Application for Payment.

10) Distribution of the Contract Documents.

11) Submittal procedures.

12) Preparation of record documents.

13) Use of the premises.

14) Work restrictions.

15) Working hours.

16) Owner's occupancy requirements.

17) Responsibility for temporary facilities and controls.

18) Procedures for moisture and mold control.

19) Procedures for disruptions and shutdowns.

20) Construction waste management and recycling.

21) Parking Availability.

22) Office, work, and storage areas.

23) Equipment deliveries and priorities.

24) First Aid.

25) Security.

26) Progress cleaning.

27) Safety.

b. Meeting Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

4. Pre-installation Meetings: Conduct a preinstallation meeting at Project site before each construction activity that requires coordination with other construction. All Key personnel of contractor, subcontractors, manufacturer representative and Owner's Commissioning Authority shall attend. Notify other parties as the Owner's Representative or Architect might designate, as job conditions and progress might warrant.

a. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

1) Contract Documents.

2) Options.

3) Related RFIs.

4) Related Change Orders.

5) Purchases and Deliveries.

6) Submittals.

7) Review of Mockups.

8) Possible conflicts and Compatibility problems.

9) Time schedules and weather limitations.

10) Manufacturer's written recommendations.

11) Warranty requirements.

12) Compatibility of materials and acceptability of substrates.

13) Temporary facilities and controls.

14) Space and access limitations.

15) Regulations of authorities having jurisdiction.

16) Testing and inspecting requirements.

17) Installation procedures and coordination with other work.

18) Required performance results.

19) Protection of adjacent work, construction and personnel.

b. Meeting Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

5. Project Closeout Meetings: Schedule and conduct a Project closeout meeting, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion. All Key personnel of contractor, subcontractors, owner, owner's commissioning authority and design professionals shall attend. Notify other parties as the Owner's Representative or Architect might designate, as job conditions and progress might warrant.

a. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

1) Submission of record documents.

2) Procedures required prior to inspection for Substantial Completion and for Final inspections for acceptance.

3) Submittal of written warranties.

4) Requirements for preparing operations and maintenance data.

5) Requirements for demonstrations and training.

6) Preparation of Contractor's punch list.

7) Procedures for processing Applications for Payment at Substantial Completion and for final payment.

8) Submittal Procedures.

9) Coordination of separate contracts.

10) Owner's partial occupancy requirements.

11) Installation of Owner's furniture, fixtures, and equipment.

12) Responsibility for removing temporary facilities and controls.

b. Meeting Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

1.03 RECORDS

A. Record Drawings: Maintain on site a complete set of Construction Documents and Shop Drawings as required by Section 01 70 00 - Project Closeout.

B. Construction Photographs: Refer to Sections 01 32 33 - Photographic Documentation.

1.04 SUBMITTALS

A. Subcontractor List: Submit list of subcontractors with addresses, telephone numbers and e-mail addresses for approval within twenty-four (24) hours after notification of intent to enter into Contract. Prepare list on the form of a sworn statement attesting to the validity of such. Do not change the name of subcontractors or vendors on the approved list without the specific written form stating sufficient reason to warrant such a change.

B. Schedule of Values: Prepare detailed accounting of Contract Sum on the basis of "trades" Sections indicated in the Table of Contents. Submit and obtain approval before first application for payment. Use only approved breakdown for payment requests.

C. Payment Schedule: Submit to the Architect at least twenty (20) days prior to the submission of the first request for payment, a schedule detailing projected monthly requests for payment for the duration of the Project.

D. Shop Drawings and Samples:

1. Refer to Section 01 33 23 - Shop Drawings and Samples.

2. In addition to Section 01 33 23, the Contractor shall furnish the Owner with one (1) copy of all approved Shop Drawings and manufacturers product data bound in loose leaf form, for the Owner's records, prior to Owner issuing the Certificate of Substantial Completion.

E. Test Reports: Submit copies as required herein, with distribution as directed by the Architect.

1.05 DOCUMENTS

A. Performance and Labor and Material Payment Bonds:

1. If required, deliver to the Owner within ten (10) days of the date of the notification of intent to enter into Contract.

2. Condition bonds for the faithful performances of the Contract and for the payment of labor and material, each in the sum of 100% of the amount of the Contract as set forth in notification of intent to enter into Contract.

3. The Owner, at the Owner's discretion, reserves the right to accept or reject the company underwriting the bonds on the basis of their previous performance.

B. Agreement: Use AIA Form A111.

C. Application for Payment: Use AIA Form G702 and G703.

D. Sworn Statements: Use uniform commercial format designated by the Owner.

E. Insurance Certificate: Use form selected by Owner. Owner may, at the Owner's option, require a certified copy of Contractor's insurance policies in addition to insurance certificates.

1.06 QUALITY CONTROL

A. Standards: Establish a quality control system to perform sufficient inspection and tests of all Work, including subcontractors, to ensure conformance to applicable Specifications and Drawings, with respect to materials, workmanship, construction, finish, functional performance, and identification. Control system shall specifically include observation, supervision, and tests required in the Specifications.

B. Testing: Provide testing in accordance with Section 01 45 23 - Testing and Inspecting Services.

1.07 SCHEDULE

A. Dates: Work shall commence and be substantially completed as specified in the Contract Agreement.

B. Schedule:

1. Prepare a “Plan of Operations and Progress Schedule” to indicate the manner in which different phases of the Work are to be started, when Shop Drawings and submittals are to be submitted, colors selected, methods and speed for progressing different phase actions, and dates upon which subcontractors are dependent upon other sub-contracts. Schedule shall indicate major items of Work, including foundations, column footings, steel erection, floor finishes, underfloor plumbing and electrical Work, roof mounted HVAC equipment, concrete floor pours, partition Work, and date of Final Completion.

2. Plan of Operations and Progress Schedule shall be “weighted” to schedule each trade in proportion to the entire Project, physically and financially.

3. Revise schedule monthly to indicate actual progress compared to the estimated progress.

4. Post schedule in the Contractor’s field office and distribute copies to the Owner, Architect, Project Representative, and all prime Subcontractors.

1.09 PAYMENT

A. Requests:

1. On or before the tenth (10th) day of each month, the Contractor shall make application for payment in quadruplicate based on percentage of completion of items of cost breakdown.

2. Each application after the first one shall be accompanied by waivers of lien and sworn statements that all labor, materials, and services included in the previous and prior statements have been paid, less only the retained percentage stated herein, and any disputed amounts which shall be stated. In addition, the Contractor shall request and file with the request for payment a sworn statement from each Subcontractor that the Contractor has direct contractual relations with.

B. Payment: The Owner shall make payments on account of each contract as provided herein. Within thirty (30) days after submission and approval of the application for payment the Owner will pay ninety (90) percent of the value except as may be modified as follows, based on the Contract prices, including executed change orders amending the Contract, on labor and materials incorporated in the Work, and material suitably stored at the site up to the first day of that month as certified by the Architect, less the aggregate of the previous payments.

C. Retained Percentage:

1. Ten (10) percent of the estimated amounts shall be retained until the final completion and acceptance of all Work covered by the Contract.

2. The retained percentage shall be paid thirty (30) days after Owner's acceptance of the building, providing that all requirements of the Contract are met. Refer to Closing Procedure.

D. Substantial Completion Payment: Upon issuance of Certificate of Substantial Completion, a sum shall be paid sufficient to increase the payments to the total of the Contract, less the retained percentage.

E. Final Certificate:

1. After the Contractor has complied with the closing requirements specified herein, and provided the Architect with appropriate documentation, the Architect shall certify such, issuing a Final Certificate.

2. Issuance of such Certificate does not relieve the Contractor of the responsibilities related to guaranteeing the performance of the facility, as specified herein or otherwise provided.

1.10 CLEANING

A. Keep the premises free from accumulation of waste materials or rubbish caused by Work operations at all times. At the completion of the Work remove all waste materials and rubbish from and about the Project, as well as all tools, construction equipment, machinery, and surplus materials.

B. Establish and enforce a daily system for collecting and disposing waste materials from construction areas and elsewhere at Project site. Do not hold collected materials at site for more than three (3) days. Handle hazardous, dangerous, unsanitary, contaminating, pollution and similar harmful wastes separately from inert materials by containerizing in an appropriate manner. Dispose of each category of waste material in a lawful manner. Do not bury or burn waste materials on Owner's property.

1.10 CLOSING PROCEDURES

A. Financial:
1. Furnish ample evidence to Architect and Owner that all financial obligations have been met, including sworn statements and final waivers of lien.

2. Obtain a written statement releasing the Owner and the Architect from any and all obligations which might arise out of any unpaid, defaulted, or otherwise unsatisfied accounts.

B. Punch List:

1. Complete and correct all items on the Punch List as originally issued, and amended.

2. If contemplating application for final payment, schedule a joint inspection visit to the Project with the Architect one (1) week in advance to determine if the Contracts have been fully executed.

C. Record Drawings: Deliver not less than three (3) sets of documents to the office of the Architect.

D. Warranties and Guarantees:

1. Submit all written warranties and guarantees.

2. Submit as applicable, list of contacts, including company name, personal contact, address, telephone number, and e-mail address for building equipment and components which may require periodic service, including roofing, power actuated doors, mechanical equipment, fire protection, plumbing, and electrical equipment.

C. Other Documents:

1. Furnish reports of all tests and the performance of completed systems, as required in the Specifications, and all certificates of approval.

2. Furnish all schedules, instructions, and equipment operation and service manuals as necessary to ensure safe and proper operation and maintenance of products installed in the building.

E. Final Certificate: Issuance of Final Certificate does not relieve the Contractors of the responsibilities related to warranting and guarantying the performance of the Work.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2. SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 012300 "Alternates" for products selected under an alternate.

2. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

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

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.

2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

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

1. Substitution Request Form: Use Industry Standard Form.

2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.

b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.

c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

e. Samples, where applicable or requested.

f. Certificates and qualification data, where applicable or requested.

g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.

h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES, NFPA, end related codes adopted by the City of McAllen.

j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.

k. Cost information, including a proposal of change, if any, in the Contract Sum.

l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.

m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor through Construction Manager of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

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

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.

b. Substitution request is fully documented and properly submitted.

c. Requested substitution will not adversely affect Contractor's construction schedule.

d. Requested substitution has received necessary approvals of authorities having jurisdiction.

e. Requested substitution is compatible with other portions of the Work.

f. Requested substitution has been coordinated with other portions of the Work.

g. Requested substitution provides specified warranty.

h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not allowed unless otherwise indicated.

C. Substitutions for Convenience: Architect will consider requests for substitution if received within 30 days after commencement of the Work. Requests received after that time may be considered or rejected at discretion of Architect.

1. 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:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.

b. Requested substitution does not require extensive revisions to the Contract Documents.

c. Requested substitution is consistent with the Contract Documents and will produce indicated results.

d. Substitution request is fully documented and properly submitted.

e. Requested substitution will not adversely affect Contractor's construction schedule.

f. Requested substitution has received necessary approvals of authorities having jurisdiction.

g. Requested substitution is compatible with other portions of the Work.

h. Requested substitution has been coordinated with other portions of the Work.

i. Requested substitution provides specified warranty.

j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.3 DEFINITIONS

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

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:

    a. Application for Payment forms with continuation sheets.
    b. Submittal schedule.
    c. Items required to be indicated as separate activities in Contractor's construction schedule.

2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
5. Subschedules for Separate Design Contracts: Where the Owner has retained design professionals under separate contracts who will each provide certification of payment requests, provide subschedules showing values coordinated with the scope of each design services contract as described in Section 010100 "General Scope of Work."

B. Format and Content: Use 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 schedule of values consistent with format of AIA Document G703.
3. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:

    a. Related Specification Section or Division.
    b. Description of the Work.
    c. Name of subcontractor.
    d. Name of manufacturer or fabricator.
    e. Name of supplier.
    f. Change Orders (numbers) that affect value.
    g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

        1) Labor.
        2) Materials.
        3) Equipment.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.

5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

    a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.

7. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. 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.
9. Purchase Contracts: Provide a separate line item in the schedule of values for each purchase contract. Show line-item value of purchase contract. Indicate owner payments or deposits, if any, and balance to be paid by Contractor.
10. 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.

11. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial 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. Application for Payment Forms: Use AIA Document G702 as form for Applications for Payment.

D. Application for Payment Forms: Use forms acceptable to Architect and Owner for Applications for Payment. Submit forms for approval with initial submittal of schedule of values.

E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.

b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

G. Transmittal: Submit three 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.

H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or proceeded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit executed waivers of lien on forms, acceptable to Owner.

I. 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. Submittal schedule (preliminary if not final).
5. List of Contractor's staff assignments.
6. List of Contractor's principal consultants.
7. Copies of building permits.
8. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
9. Initial progress report.
10. Report of preconstruction conference.
11. Certificates of insurance and insurance policies.

J. Application for Payment at Substantial Completion: After Architect issues 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 Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Coordination and project conditions.

B. Field engineering.

C. Pre-construction meeting.

D. Site mobilization meeting.

E. Progress meetings.

F. Pre-installation meetings.

G. Equipment electrical characteristics and components.

H. Cutting and patching.

I. Special procedures.

1.2 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

C. Coordinate space requirements, supports, and installation of mechanical and electrical work, which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

E. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's occupancy.

F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.3 PRECONSTRUCTION MEETING

A. Owner and Architect/Engineer will schedule a meeting after Notice of Award.

B. Attendance Required: Owner, Architect/Engineer and Contractor.

C. Agenda:

1. Execution of Owner-Contractor Agreement.

2. Submission of executed bonds and insurance certificates.

3. Distribution of Contract Documents.

4. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.

5. Designation of personnel representing the parties in Contract, Owner and the Architect/Engineer.

6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.

7. Scheduling.

8. Scheduling activities of a Geotechnical Engineer.

D. Record minutes and distribute copies within two days after meeting to participants, with four copies to Architect/Engineer, Owner, participants, and those affected by decisions made.

1.4 SITE MOBILIZATION MEETING

A. Architect/Engineer and Owner will schedule a meeting at the Project site prior to Contractor occupancy.

B. Attendance Required: Owner, Architect/Engineer, Special Consultants, Contractor, Contractor's Superintendent, and major Subcontractors.

C. Agenda:

1. Use of premises by Owner and Contractor.

2. Owner's requirements.

3. Construction facilities and controls provided by Owner.

4. Temporary utilities provided by Owner.

5. Survey and building layout.

6. Security and housekeeping procedures.

7. Schedules.

8. Application for payment procedures.

9. Procedures for testing.

10. Procedures for maintaining record documents.

11. Requirements for start-up of equipment.

12. Inspection and acceptance of equipment put into service during construction period.

D. Record minutes and distributes copies within two days after meeting to participants, with four copies to Architect/Engineer, Owner, participants, and those affected by decisions made.

1.5 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.

B. Contractor shall coordinate with Architect/Engineer arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.

C. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner, Architect/Engineer, as appropriate to agenda topics for each meeting.

D. Agenda:

1. Review minutes of previous meetings.

2. Review of work progress.

3. Field observations, problems, and decisions.

4. Identification of problems, which impede planned progress.

5. Review of submittals schedule and status of submittals.

6. Review of off-site fabrication and delivery schedules.

7. Maintenance of progress schedule.

8. Corrective measures to regain projected schedules.

9. Planned progress during succeeding work period.

10. Coordination of projected progress.

11. Maintenance of quality and work standards.

12. Effect of proposed changes on progress schedule and coordination.

13. Other business relating to Work.

E. Record minutes and distributes copies within two days after meeting to participants, with four copies to Architect/Engineer, Owner, participants, and those affected by decisions made.

1.6 PREINSTALLATION MEETING

A. When required in individual specification sections, convene a pre-installation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, Work of the specific section.

C. Notify Architect/Engineer seven days in advance of meeting date.

D. Prepare agenda and preside at meeting:

1. Review conditions of installation, preparation and installation procedures.

2. Review coordination with related work.

E. Record minutes and distribute copies within two days after meeting to participants, with four copies to Architect/Engineer, Owner, participants, and those affected by decisions made.

PART 2 PRODUCTS

2.1 EQUIPMENT ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Motors: Specific motor type is specified in individual specification sections.

B. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Include lugs for terminal box.

C. Cord and Plug: Provide minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

PART 3 EXECUTION

3.1 CUTTING AND PATCHING

A. Employ skilled and experienced installer to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements which affect:

1. Structural integrity of element.

2. Integrity of weather-exposed or moisture-resistant elements.

3. Efficiency, maintenance, or safety of element.

4. Visual qualities of sight exposed elements.

5. Work of Owner or separate contractor.

C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:

1. Fit the several parts together, to integrate with other Work.

2. Uncover Work to install or correct ill-timed Work.

3. Remove and replace defective and non-conforming Work.

4. Remove samples of installed Work for testing.

5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Execute work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

E. Cut masonry and concrete materials using masonry saw or core drill.

F. Restore Work with new products in accordance with requirements of Contract Documents.

G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with applicable codes, to full thickness of the penetrated element.

J. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.

K. Identify hazardous substances or conditions exposed during the Work to the Architect/Engineer for decision or remedy.

3.2 SPECIAL PROCEDURES

A. Materials: As specified in product sections; match existing with new products and salvaged products for patching and extending work.

B. Employ skilled and experienced installer to perform alteration work.

C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.

D. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

E. Remove debris and abandoned items from area and from concealed spaces.

F. Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.

G. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.

H. Remove, cut, and patch Work in a manner to minimize damage and to provide means of restoring products and finishes to specified condition.

I. Refinish existing visible surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.

J. Where new Work abuts or aligns with existing, provide a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.

K. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and submit recommendation to Architect/Engineer for review.

L. Where a change of plane of ¼ inch or more occurs, submit recommendation for providing a smooth transition to Architect/Engineer for review.

M. Patch or replace portions of existing surfaces, which are damaged, lifted, discolored, or showing other imperfections.

N. Finish surfaces as specified in individual product sections.

END OF SECTION

SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General coordination procedures.

2. Coordination drawings.

3. Requests for Information (RFIs).

4. Project Web site.

5. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:

1. Section 011500 "Contract Standards and Procedures" for preparing and submitting Contractor's construction schedule.

2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

3. Section 017000 "Project Closeout" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Owner, Construction Manager, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.

2. Number and title of related Specification Section(s) covered by subcontract.

3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 10 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room, in temporary field office, on Project Web site, and by each temporary telephone. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.

3. Make adequate provisions to accommodate items scheduled for later installation.

B. 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 to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.

2. Preparation of the schedule of values.

3. Installation and removal of temporary facilities and controls.

4. Delivery and processing of submittals.

5. Progress meetings.

6. Preinstallation conferences.

7. Project closeout activities.

8. Startup and adjustment of systems.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

1.6 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:

a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.

b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.

c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.

d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.

e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.

f. Indicate required installation sequences.

g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.

2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.

3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.

4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.

5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.

6. Mechanical and Plumbing Work: Show the following:

    a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.

    b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.

    c. Fire-rated enclosures around ductwork.

7. Electrical Work: Show the following:

    a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.

    b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.

    c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.

    d. Location of pull boxes and junction boxes dimensioned from column center lines.

8. Fire-Protection System: Show the following:

    a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

9. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make changes as directed and resubmit.

10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 "Submittal Procedures."

1.7 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.

2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

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

1. Project name.

2. Project number.

3. Date.

4. Name of Contractor.

5. Name of Architect and Construction Manager.

6. RFI number, numbered sequentially.

7. RFI subject.

8. Specification Section number and title and related paragraphs, as appropriate.

9. Drawing number and detail references, as appropriate.

10. Field dimensions and conditions, as appropriate.

11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.

12. Contractor's signature.

13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. Architect's and Construction Manager's Action: Architect and Construction Manager will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect or Construction Manager after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.

    b. Requests for approval of substitutions.

    c. Requests for approval of Contractor's means and methods.

    d. Requests for coordination information already indicated in the Contract Documents.

    e. Requests for adjustments in the Contract Time or the Contract Sum.

    f. Requests for interpretation of Architect's actions on submittals.

    g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.

3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Construction Manager in writing within 10 days of receipt of the RFI response.

D. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly Include the following:

1. Project name.

2. Name and address of Contractor.

3. Name and address of Architect and Construction Manager.

4. RFI number including RFIs that were returned without action or withdrawn.

5. RFI description.

6. Date the RFI was submitted.

7. Date Architect's and Construction Manager's response was received.

E. On receipt of Architect's and Construction Manager's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect and Construction Manager within seven days if Contractor disagrees with response.

1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.8 PROJECT WEB SITE

A. Use Architect's Project Web site for purposes of hosting and managing project communication and documentation until Final Completion when file size surpasses e-mail max attachment limit, and when otherwise directed by Architect.

B. Contractor, subcontractors, and other parties granted access by Contractor to Project Web site shall execute a data licensing agreement in the form of Agreement acceptable to Owner and Architect.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 32 33
PHOTOGRAPHIC DOCUMENTATION

The requirements of the “General Conditions”, the “Supplementary Conditions”, and “Division 1” sections of the Specifications, shall apply to this section of the specifications.

PART 1 - GENERAL

1.01 SCOPE

A. This Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.

2. Periodic construction photographs.

3. Final Completion construction photographs.

1.02 SUBMITTALS

A. Construction Photographs: Submit digital photographs 14 days of taking photographs and digital copies with the monthly application for payment.

1. Format: 3x5 inch smooth-surface matte prints on single-weight commercial-grade photographic paper, enclosed back to back in clear plastic sleeves that are punched for standard 3-ring binder.

2. Identification: On back of each print, provide an applied label or rubber-stamped impression with the following information:

a. Name of Project.

b. Name and address of photographer.

c. Name of Architect.

d. Name of Contractor.

e. Date photograph was taken if not date stamped by camera.

f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

g. Unique sequential identifier.

3. Digital Images: Submit a complete set of digital image electronic files with each submittal of prints on CD-ROM. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as the sensor, uncropped.

1.03 QUALITY ASSURANCE

Retain "Photographer Qualifications" Paragraph below when project circumstances warrant services of a professional photographer in lieu of ordinary documentation by Contractor's project staff.

A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

B. Web-Based Photographic Documentation Service Provider: A firm specializing in providing photographic equipment, Web-based software, and related services for construction projects, with record of providing satisfactory services similar to those required for Project.

1.04 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS

2.01 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in uncompressed TIFF format, produced by a digital camera with minimum sensor size of 4.0 megapixels, and at an image resolution of not less than 1024 by 768 pixels.

PART 3 - EXECUTION

3.01 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date and Time: Include date and time in filename for each image.

2. Field Office Images: Maintain one set of images on CD-ROM in the field office at Project site, available at all times for reference. Identify images same as for those submitted to Architect.

C. Pre-construction Photographs: Before commencement of construction the contractor shall document in digital photographs the project site and surrounding properties, including existing items to remain during construction, from different vantage points.

1. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

D. Periodic Construction Photographs: Take color, digital photographs monthly, coinciding with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

E. Final Completion Construction Photographs: Take ten color photographs after date of Substantial Completion for submission as Project Record Documents. Architect will direct photographer for desired vantage points.

1. Do not include date stamp.

G. Additional Photographs: Architect may issue requests for additional photographs, in addition to periodic photographs specified.

1. Three days' notice will be given, where feasible.

2. In emergency situations, take additional photographs within 24 hours of request.

3. Circumstances that could require additional photographs include, but are not limited to, the following:

a. Special events planned at Project site.

b. Immediate follow-up when on-site events result in construction damage or losses.

c. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.

d. Substantial Completion of a major phase or component of the Work.

e. Extra record photographs at time of final acceptance.

f. Owner's request for special publicity photographs.

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.

D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.

    a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:

    a. Scheduled date for first submittal.
    b. Specification Section number and title.
    c. Submittal category: Action; informational.
    d. Name of subcontractor.
    e. Description of the Work covered.
    f. Scheduled date for Architect's final release or approval.
    g. Scheduled date of fabrication.
    h. Scheduled dates for purchasing.
    i. Scheduled dates for installation.
    j. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.

1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.

    a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
    b. Digital Drawing Software Program: The Contract Drawings are available in PDF drawings.
    c. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Architect.
    d. Digital data drawing files will made available in PDF Format.
    e. The following digital data files will by furnished for each appropriate discipline:

1) Floor plans.
2) Reflected ceiling plans.
3) Digital data file in PDF Format.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
5. Insert list of submittals requiring sequential review in first subparagraph below, or delete and identify submittals in Sections where they are specified. Structural, HVAC, plumbing, and electrical components are examples of the Work that often require sequential review.
6. Allowing procedure in "Concurrent Consultant Review" Subparagraph below may cause tracking problems for Architect and Construction Manager, if any. Delete if not allowed. See Evaluations.
7. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.

D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.

3. Include the following information for processing and recording action taken:

    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Construction Manager.
    e. Name of Contractor.
    f. Name of subcontractor.
    g. Name of supplier.
    h. Name of manufacturer.
    i. Submittal number or other unique identifier, including revision identifier.

        1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

    j. Number and title of appropriate Specification Section.
    k. Drawing number and detail references, as appropriate.
    l. Location(s) where product is to be installed, as appropriate.
    m. Other necessary identification.

4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

    a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.

5. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return without review submittals received from sources other than Contractor.

    a. Transmittal Form for Paper Submittals: Use AIA Document G810.
    b. Transmittal Form for Paper Submittals: Provide locations on form for the following information:

        1) Project name.
        2) Date.
        3) Destination (To:).
        4) Source (From:).
        5) Name and address of Architect.
        6) Name of Construction Manager.
        7) Name of Contractor.
        8) Name of firm or entity that prepared submittal.
        9) Names of subcontractor, manufacturer, and supplier.
        10) Category and type of submittal.
        11) Submittal purpose and description.
        12) Specification Section number and title.

13) Specification paragraph number or drawing designation and generic name for each of multiple items.
14) Drawing number and detail references, as appropriate.
15) Indication of full or partial submittal.
16) Transmittal number, numbered consecutively.
17) Submittal and transmittal distribution record.
18) Remarks.
19) Signature of transmitter.

E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.

    a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:

    a. Project name.
    b. Date.
    c. Name and address of Architect.
    d. Name of Construction Manager.
    e. Name of Contractor.
    f. Name of firm or entity that prepared submittal.
    g. Names of subcontractor, manufacturer, and supplier.
    h. Category and type of submittal.
    i. Submittal purpose and description.
    j. Specification Section number and title.
    k. Specification paragraph number or drawing designation and generic name for each of multiple items.
    l. Drawing number and detail references, as appropriate.
    m. Location(s) where product is to be installed, as appropriate.
    n. Related physical samples submitted directly.
    o. Indication of full or partial submittal.
    p. Transmittal number, numbered consecutively.
    q. Submittal and transmittal distribution record.
    r. Other necessary identification.
    s. Remarks.

5. Metadata: Include the following information as keywords in the electronic submittal file metadata:

a. Project name.
b. Number and title of appropriate Specification Section.
c. Manufacturer name.
d. Product name.

F. Options: Identify options requiring selection by Architect.

G. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Post electronic submittals as PDF electronic files directly to Architect's FTP site specifically established for Project.

a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2. Submit electronic submittals via email as PDF electronic files.

a. Architect, will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

3. Action Submittals: Submit submittals in PDF Format or three paper copies of each submittal unless otherwise indicated. Architect will return two copies.
4. Informational Submittals: Submit in PDF Format or submit two paper copies of each submittal unless otherwise indicated. Architect will not return copies.
5. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

    a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
    b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams showing factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:

    a. PDF electronic file.
    b. Three paper copies of Product Data unless otherwise indicated. Architect will return two copies.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based on Architect's digital data drawing files is otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.
    b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.
    e. Notation of dimensions established by field measurement.
    f. Relationship and attachment to adjoining construction clearly indicated.
    g. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
3. Submit Shop Drawings in the following format:

    a. PDF electronic file.
    b. Two opaque (bond) copies of each submittal. Architect, will return one copy(ies).
    c. Three opaque copies of each submittal. Architect will retain two copies; remainder will be returned.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

    a. Generic description of Sample.
    b. Product name and name of manufacturer.
    c. Sample source.
    d. Number and title of applicable Specification Section.
    e. Specification paragraph number and generic name of each item.

3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

   a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.

      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.
5. Submit product schedule in the following format:

   a. PDF electronic file.
   b. Three paper copies of product schedule or list unless otherwise indicated. Architect will return two copies.

F. Coordination Drawing Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."

G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."

H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."

I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."

J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017000 "Project Closeout."

K. Maintenance Data: Comply with requirements specified in Section 017823 "Operation and Maintenance Data."

L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

O. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

T. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

U. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

V. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

W. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

X. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

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.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and three paper copies of certificate, 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.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION

SECTION 01 33 23
SHOP DRAWINGS AND SAMPLES

The requirements of the “General Conditions”, the “Supplementary Conditions”, and “Division 1” sections of the Specifications, shall apply to this section of the Specifications.

PART 1 - GENERAL

1.01 SUBMITTALS

A. Summary Listing and Schedule: General Contractor shall prepare a summary listing and schedule for submission of Shop Drawings, Samples, and Product Data to the Architect for review of the various items of Work. Schedule shall allow approximately two (2) calendar weeks or ten (10) working days for review; however, this may vary depending upon the quantity of the material submitted. Schedule shall also allow time for submission of Shop Drawings, Samples, and Brochures which may not be approved.

B. Substitution Requests: Submit a PDF digital copy of each request for consideration. Indentify 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 product or fabrication or installation cannot be provided, if applicable.

b. Coordination information, including a list of changes or revisions needed to other parts of the work and to construction performed by owner and separate contractors that will be necessary to accommodate proposed substitution.

c. Detailed comparison of signification qualities of proposed substitution with those of the work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirement included. Indicate deviations, if any, from the work specified.

d. Product Data, including drawings and descriptions of product and fabrications and installation procedures.

e. Samples, where applicable or requested.

f. Certificates and qualification data, where applicable or requested.

g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

h. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the work, including effect on overall contract time. If specified product or method of construction cannot be provided within contract time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.

i. Cost information, including a proposal of change, if any, in contract sum.

j. Contractor's certification except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.

k. 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 seven days of receipt of a request for substitution. Architect will notify Contractor through General Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the work.

b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

c. Conditions of Acceptance: 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 and has been coordinated with other portions of the work.

(8) Requested Substitution provides specified warranty.

(9) If requested Substitution involves more than one contractor, requested substitution has been coordinated with other products, and is acceptable to all contractors involved.

C. Submittals: Each Subcontractor shall submit through the General Contractor, to the Architect at proper times, all Shop Drawings, Product Data, and setting diagrams which the Architect may deem necessary to illustrate the Work intended or show its relation to Work of other trades. Shop Drawings and Product Data shall contain manufacturer's name, material description, sizes and dimensions, and other pertinent information. All submittals, including resubmittals, shall have Product Data identifying the materials to be supplied by circling or denoting the intended materials on the Product Data sheets.

1. Prohibited Submittals: Contractors shall not duplicate Design/Working Drawings for use as Shop Drawings. Duplicated Drawings of this nature shall be rejected.

2. Required Information: Include in submittals sufficient drawings, plans, elevations, sections, performance data, dimensions, bolt locations, inserts, sound data, weights and schematics to clearly describe the equipment and to show compliance with the Specifications. Provide a cover or title sheet for each submittal containing the following:

a. Name of Contractor originating the submittal.

b. Name of Project for which the submittal is made.

c. An index of all items submitted.

d. Identification of each item of material and equipment.

e. Date of submittal.

f. Contractor's certification.

D. Deviations: Any and all deviations from the Specifications and/or Drawings must be brought to the Architect's attention by circling all items submitted for review.

E. Identification: Shop Drawing submittals and transmittal letters shall be identified with title and location of Project, names of the Architect, the Contractor, and the submission date.

F. Compliance Review: All Shop Drawings and Product Data submitted to the Architect shall be stamped by the General Contractor to indicate that the submittal has been reviewed for compliance with the Contract Documents, coordination between other Trade Work, and related details.

G. Reimbursement of Architect's Costs:

1. In the event substitutions are proposed to the Architect after the Contract has been awarded, the Architect will record all time used by the Architect and the Architect's consultants in evaluation of each proposed substitution.

2. Whether or not the Architect approves a proposed substitution, the Contractor shall promptly upon receipt of the Architect's billing, reimburse the Architect at the rate of two and three-quarter (2-3/4) times the direct cost of the Architect and the Architect's consultants for all time spent in evaluating the proposed substitution.

H. Architectural and Structural Shop Drawings: The General Contractor shall submit to the Architect, for review a PDF digital copy of each drawing.

1. If the Shop Drawings are returned "Revise & Resubmit", the effected Contractor shall correct the original Drawings and resubmit the Shop Drawings as originally required, i.e., PDF digital copy to the Architect for review, file, and distribution.

2. Submit PDF digital copies of Product Data such as catalog cuts and brochures.

I. Mechanical and Electrical Shop Drawings: Submit for review PDF digital copy of all equipment and products in a brochure type format.

J. Required Shop Drawings: Shop Drawings are required for, but are not necessarily limited to the items as required by the Drawings and/or Specifications within the Project Manual.

K. Review of Shop Drawings:

1. It shall be distinctly understood that the review of Shop Drawings shall be for General Scheme only. Review does not relieve the Contractor from the necessity of correcting, without charge, details on the Drawings and completed Work found deficient in strength or otherwise faulty.

2. The Architect assumes no responsibility for “figured dimensions” of Shop Drawings.

3. The review of Shop Drawings does not relieve or modify the responsibility for compliance with the Contract Documents or dimensions or errors contained in the submittal or quantity count. It is clearly understood that in the review process, noting of some discrepancies, but overlooking others, does not grant the Contractor permission to proceed in error. Regardless of any information contained in the Shop Drawings, layout drawings, catalog data and brochures, the Contract Documents govern the Work, and are neither waived nor suspended in any way by the review of Shop Drawings, layout drawings, catalog data and brochures.

4. Upon completion of the Project the Owner shall be given one (1) set of reviewed Shop Drawings.

L. Authorization: Unless specifically otherwise required by the Architect and the Owner, no materials shall be ordered, delivered, fabricated, or erected until the proper written review by the Architect has been received by the General Contractor.

1.02 SAMPLES AND LETTERS OF INTENT

A. Summary Listing: General Contractor shall prepare a summary listing of the Samples and Letters of Intent submittal requirements for review by the Architect and the Owner’s Supervising Engineer.

B. Material Samples and Letters of Intent: Samples and Letters of Intent as listed and requested in the respective trade Specifications enumerate, but do not necessarily limit, the material Samples or Letters of Intent indicating materials, specifications, and/or installation procedures, which shall be submitted for approval PRIOR to purchase or installation of materials. All material Samples shall be reviewed by the Architect, and/or Owner PRIOR to erection or fabrication.

C. Samples: Submit to Architect for review, four (4) actual Samples of all materials to be used in the Work. All Samples shall have the same finish as that to be used in the completed Work. Manufacturer's color charts and/or color swatches shall not be acceptable as Samples. Samples shall be accompanied by a letter requesting approval and presenting all required data.

D. Materials: All materials furnished shall be fully equal to the reviewed Samples.

E. Selections: Where the choice of more than one make or style of article or material is specified, the final selection of the article or material shall be made by the Owner.

F. Quality, Fitness, and Workmanship: The quality or fitness of materials or workmanship shall be based on the requirements that all Work done or materials furnished shall be first class in every respect, and what is usual or customary on other projects shall in no way enter into any consideration or decision.

G. Differences in Price: Where any difference occurs in price of such articles or materials, such differences are to be given before the Contracts are signed. After the Contracts have been signed, the Owner reserves the right to choose whichever article or material the Owner desires, assuming, unless previously advised to the contrary, the price is not changed thereby. Where the Specifications require a specific item "equal or comparable products" or other words to that effect, the final selection will be by the Owner.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 45 23
TESTING AND INSPECTING SERVICES

The requirements of the “General Conditions”, the “Supplementary Conditions”, and “Division 1” sections of the Specifications, shall apply to this section of the Specifications.

PART 1 - GENERAL

1.01 SCOPE

A. Work Included:

1. Owner will obtain the services of an Independent Testing Laboratory to perform testing services for concrete, steel and other materials as required, specified or directed. The Testing Laboratory shall evaluate and approve all soils testing performed by the Project Soils Engineer.

2. Requirements for testing are described in various sections of the Specifications. Where no testing requirements are described, but the Owner determines that testing is required, the Owner may require testing to be performed under currently recognized standards for testing.

B. Related Work:

1. Selection of Testing Laboratory: The Owner will select and approve a qualified, unbiased, and recognized independent commercial testing agency.

1.02 CODES AND STANDARDS

A. Testing, when required, shall be in accordance with all pertinent codes and regulations, and with selected ASTM International Standard Specifications.

1.03 TEST REPORTS AND RELATED INSTRUCTIONS

A. Promptly process and distribute all required copies of test reports and related instructions to ensure all necessary retesting and/or replacement of materials with the least possible delay to progress of the Work.

1.04 PAYMENT FOR TESTING SERVICES

A. Initial Services: The General Contractor is to pay for all Owner Selected initial testing services.

B. Retesting: When the initial tests indicate non-compliance with Contract Documents, all subsequent retesting occasioned by the non-compliance shall be performed by the same agency, and the costs thereof will be paid by the General Contractor.

1.05 CODE COMPLIANCE TESTING

A. Responsibility of Inspection and Testing: Inspection and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities or a legally constituted authority, shall be the responsibility of, and shall be paid for by the Contractor, unless otherwise provided in the Contract Documents.

1.06 TESTING LABORATORY DUTIES

A. Cooperation: Cooperate with Architect/Engineer and Contractor; provide qualified personnel after due notice.

B. Perform Specified Inspections, Sampling and Testing of Materials and Methods of Construction:

1. Take all specimens and samples.

2. Provide all sampling equipment and personnel.

3. Make all deliveries of specimens and samples to the Testing Laboratory.

4. Comply with specified standards.

5. Ascertain compliance of materials, and Work, with requirements of Contract Documents.

C. Irregularities and Deficiencies: Immediately notify Architect/Engineer, Owner's Supervising Engineer, and Contractor of observed irregularities or deficiencies of Work or products in the field or laboratory as a result of testing. All irregularities and deficiencies encountered shall not go unresolved. Testing reports submitted to Architect/Engineer shall be for file purposes only and shall include the resolution of these irregularities and/or deficiencies.

D. Reports of Tests and Inspections: Promptly submit written report of each test and inspection; one (1) copy each to Owner's Supervising Engineer, Owner, and Contractor, and three (3) copies to Architect/Engineer. Each report shall include:

1. Date issued.

2. Detailed listing.

3. Project title and number.

4. Testing Laboratory name, address and telephone number.

5. Name and signature of laboratory inspector.

6. Date and time of sampling or inspection.

7. Record of temperature and weather conditions.

8. Date of test.

9. Identification of product and Specification section.

10. Location of sample or test in the Project.

11. Name of person taking sample or making test.

12. Type of inspection or test.

13. Results of tests and compliance with Contract Documents.

14. Interpretation of test results, when requested by Architect/Engineer.

E. Additional Tests: Perform additional tests as required by Architect/Engineer, Owner's Supervising Engineer, or Owner.

F. Special Inspections: Submit “Statement of Special Inspections” and a certified written report of each special inspection, test or similar service; one (1) copy each to Owner's Supervising Engineer, Owner, and Contractor, and three (3) copies to Architect/Engineer. Submit additional copies of each report to governing authority, when the authority so directs.

1. Report Data: Written inspection or test reports for the Project shall include, but shall not necessarily be limited to applicable special inspections listed below:

a. Inspection of Fabrication per Building Code Section 1704.2, and as required by Structural Drawings.

b. Inspection of Steel Construction per Building Code Section 1704.3, and as required by Structural Drawings.

c. Inspection of Concrete Construction per Building Code Section 1704.4, and as required by Structural Drawings.

d. Inspection of Masonry Construction per Building Code Section 1704.5, and as required by Structural Drawings.

e. Inspection of Soils per Building Code Section 1704.7, and as required by Structural Drawings.

f. Inspection of Pier Foundations per Building Code Section 1704.9, and as required by Structural Drawings.

g. Inspection of Wall Panels and Veneers (seismic) per Building Code Section 1704.10, and as required by Structural Drawings.

h. Inspection of Exterior Insulation and Finish Systems (EIFS) per Building Code Section 1704.12.

1.07 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

A. Laboratory is not authorized to:

1. Release, revoke, alter or enlarge on requirements of Contract Documents.

2. Approve or accept any portion of the Work.

3. Perform any duties of the Contractor.

1.08 CONTRACTOR'S RESPONSIBILITIES

A. General: Cooperate with laboratory personnel, provide access to Work, to material manufacturer’s operations.

B. Samples: Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.

C. Preliminary Design Mixes: Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the Testing Laboratory.

D. Test Reports: Furnish copies of Products test reports as required.

E. Furnish Incidental Labor and Facilities:

1. To provide access to Work to be tested.

2. To obtain and handle samples at the source of the product to be tested.

3. To facilitate inspections and tests.

4. For storage and curing of test samples.

F. Notification to Laboratory: Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.

1. When tests or inspections cannot be performed after such notice, reimburse Owner for laboratory personnel and travel expenses incurred due to Contractor's negligence.

G. Contractor's Convenience Testing: For testing performed exclusively for Contractor's convenience, employ and pay for the services of a separate, equally qualified Independent Testing Laboratory.

H. Payment for Testing Services: Pay for services of Owner selected Testing Laboratory to extent previously specified in Article 1.04 PAYMENT FOR TESTING SERVICES.

1.09 SCHEDULES FOR TESTING

A. Time Required for Testing: By advance discussion with the testing agency selected by the Owner, determine the time required for the testing agency to perform its tests and to issue each of its findings. Provide all required time within the construction schedule.

B. Changes in Construction Schedules: When changes of construction schedules are necessary during construction, coordinate all such changes of schedules with the testing agency as required.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

The requirements of the “General Conditions”, the “Supplementary Conditions”, and “Division 1” sections of the Specifications, shall apply to this section of the Specifications.

PART 1 - GENERAL

1.01 SCOPE

A. Work Included: Provide all labor, materials, equipment, transportation, protection, and services necessary for, and incidental to, the proper execution and completion of all Temporary Facilities and Control Work, as indicated on the Drawings and as specified herein. Work includes, but is not necessarily limited to the following:

1. Temporary Utilities: Water service and distribution, Temporary electric power and light, temporary heat, Telephone service and sanitary facilities, including drinking water.

2. Support Facilities: Field Offices, Storage sheds, Temporary Enclosures, Construction Aids and Miscellaneous services and facilities.

3. Security and Protection Facilities: Temporary fire protection, Barricades, Warning signs and Lights.

1.02 USE CHARGES

A. General: Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and faculties without, including, but not limited to, the Owner, the Design Professional, occupants of the Project, testing agencies, and authorities having jurisdiction.

B. Sewer Service: The General Contractor will pay sewer service use charges for sewer usage by all entitles for construction operations.

C. Water Service: The General Contractor will pay water service use charges for water usage by all entitles for construction operations.

D. Electric Power Service: The General Contractor will pay electric power service use charges for electricity usage by all entitles for construction operations.

1.03 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, Utility hookups, Staging areas, and Parking areas for construction personnel.

B. Erosion and Sedimentation Control Plan: Show compliance with requirements of EPA Construction General Permit of authorities having jurisdiction, whichever is more stringent. Coordinate with the Civil Engineer's drawings and specifications.

C. Moisture Protection Plan: Describe procedures and controls for protecting materials and construction form absorption and damage; including delivery, handling, and storage provisions for materials subject to water absorption or water damage, discarding water-damaged materials, protocols for mitigating water intrusion into completed work, and replacing water damaged work.

1. Indicate sequencing of work that requires water, such as plastering and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.

D. Dust Control and HVAC Control Plan: Submit coordination drawing and narrative that indicated the dust-control and HVAC control measures proposed for use, proposed locations, and proposed time frame for their operations. Dust Control shall be per TCEQ (Texas Commission of Environmental Quality) and City Ordinance requirements. Identify further options if proposed measures are later determined to be inadequate. Include the following:

1. Location of dust control partitions at each phase of the work.

2. HVAC system isolation schematic drawing.

3. Location of proposed air filtration system discharge.

4. Other dust control measures.

5. Waste management plan.

1.04 QUALITY ASSURANCE

A. General: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, Building Code, City Ordinance Requirements, Health and safety regulations and Utility Company Regulations.

B. Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."

1. Electrical Service: Comply with NECA, NEMA, and UL Standards and regulations and requirements of authority having jurisdiction for temporary electric service. Install service in compliance with NFPA 70 “National Electric Code.”

2. Accessible Temporary Egress: Comply with applicable provisions in ADA-ABA Accessibility Guidelines and ANSI A117.1.

C. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.05 PROJECT CONDITIONS

A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

B. Temporary Use of Permanent Facilities: Engage installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before the Owner’s acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Provide new materials. If acceptable to the Architect, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.

B. Chain Link Fencing: Minimum 0.148 inch thick, galvanized steel, chain link fabric fencing; minimum 8 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 1 5/8 inch OD top rails.

C. Portable Chain Link Fencing: Minimum 0.148 inch thick, galvanized steel, chain link fabric fencing; minimum 8 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 1 5/8 inch OD top and bottom rails. Provide galvanized steel bases for supporting post.

D. Lumber and Plywood: Comply with requirements in Division 6 Section “Rough Carpentry.”

E. Tarpaulins: Provide waterproof, fire resistant, UL Labeled tarpaulins with flame spread rating of 15 of less per ASTM E84. For temporary enclosures, provide translucent, nylon reinforced, laminated polyethylene or poly vinyl chloride, fire retardant tarpaulins.

F. Polyethylene Sheet: Reinforced, fire resistance sheet, 10 mils minimum thickness, with flame spread rating of 15 of less per ASTM E84.

G. Dust control Adhesive Surface Walk-Off Mats: Provide mats minimum 36 by 60 inches.

H. Insulation: Unfaced mineral fiber blanket, manufacturer from glass, slag wool, or rock wool; with maximum flame spread of 25 and smoke developed indexes of 50 per ASTM E84.

I. Water: Provide potable water approved by local health authorities.

2.02 TEMPORARY FACILITIES

A. Field Offices: Prefabricated or mobile units with serviceable finishes, temperature controls and foundations adequate for normal loading.

B. A Job Site Trailer: Of sufficient size to accommodate needs of the Owner and construction personnel office activities and to accommodate project meetings. Keep office clean and orderly. Furnish and equip offices as follows:

1. Furniture required for project site documents including file cabinets, plan table, plan racks, and bookcases.

2. Conference room of sufficient size to accommodate meeting of 10 individuals. Provide electrical power service and 120 V AC duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4 foot square tack and marker boards.

3. Drinking water and private toilet.

4. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.

5. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.

C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.03 EQUIPMENT

A. General: Provide new materials. If acceptable to the Architect, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.

B. Water Hoses: Provide ¾ inch, heavy-duty, abrasion resistant, flexible rubber hoses 100 feet long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.

C. Electrical Outlets: Provide properly configured, NEMA polarized outlets to prevent insertion of 110 to 112 Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

D. Electrical Power Cords: Provide grounded extension cords. Use hard service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

E. Lamps and Light fixtures: Provide general service efficient lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.

F. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system; provide vented, self contained, liquid propane gas or fuel oil heaters with individual thermostatic control.

1. Use of gasoline burning heaters, open flame heaters, or salamander type heating units is prohibited.

2. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.

3. Permanent HVAC Systems: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at the end of construction and clean HVAC system as required in Division 01 Section “Closeout Procedures.”

G. Temporary Offices: Provide prefabricated or mobile units or similar job built construction with lockable entrances, operable windows, and serviceable finishes. Provide heat heated and air conditioned unit on foundations adequate for normal loading.

H. Temporary Toilet Units: Provide self contained, single occupant toilet units of chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material.

I. Fire Extinguishers: Provide hand carried, portable, UL rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand carried, portable, UL rated, Class ABC, dry chemical extinguishers or a combination of extinguishers of NFPA recommended classes for the exposures.

1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the work. Relocate and modify facilities as required.

1. Locate facilities to limit site disturbance as specified in Division 01 Section “Summary.”

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.

3.02 TEMPORARY UTILITY INSTALLATION

A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.

1. Arrange with company and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.

2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked in services.

3. Use Charges: Neither the Owner nor Architect will accept cost or use charges as a basis of claims for Change Orders. The contractor can connect to existing water and electrical service and the owner will pay use charges for water and electricity. The contractor shall provide all other use charges including cost for temporary heat.

B. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use. Obtain all required permits.

C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

D. 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 that will not have a harmful effect on completed installations or elements being installed.

E. 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 that will not have harmful effects on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

1. Provide dehumidification systems to maintain the facilities when required to reduce substrate moisture levels to level required to allow installation or application of finishes.

F. Electric Power Service: Provide power service and distribution system of sufficient size, number of phases, capacity, and power characteristics required for construction operation and testing of all installed equipment.

1. Install electric power service overhead, unless otherwise indicated.

G. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating the entire system.

H. Telephones Service: Provide temporary telephone service in Owner’s use facilities for use by all construction personnel. Install two telephone lines for each field office. One telephone to be dedicated for facsimile machine in each field office.

1. At each telephone, post a list of important telephone numbers, including but not limiting to, Police & Fire departments, Contractor’s home Office, Design Professional’s office, Testing Consult’s office, Owner’s office, principal subcontractors’ field & home offices and superintendent’s cellular telephone.

3.03 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within the construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with requirements of NFPA 241

2. Maintain support facilities until near Substantial Competition inspection date is scheduled. Remove prior to substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

B. Temporary Use of Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. 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 sub grade and install sub base and base for temporary roads and paved areas specified in individual specification sections.

3. 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.

C. Traffic Controls: comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.

2. Maintain access for firefighting equipment and access to fire hydrants.

D. Parking: Provide temporary areas for construction personnel.

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain the project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding the project or adjoining properties nor endanger permanent work of temporary facilities.

2. Remove snow and ice as required to minimize accumulations.

F. Waste Disposal Facilities: Provide waste collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered “tools and equipment” and not temporary facilities.

H. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, freezing, other construction operations, and similar activities.

1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.

2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 sq. ft. or less with plywood or similar material.

3. Close openings through floor or roof decks and horizontal surfaces with load bearing, wood framed construction.

4. Where temporary wood or plywood enclosure exceeds 100 sq. ft. in area, use UL labeled, fire retardant treated material for framing and main sheathing.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion and sedimentation control drawings.

C. Storm water Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and sub grade construction to prevent flooding by runoff of storm water from heavy rains.

D. Tree and Plant Protection: Install temporary fencing outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

E. Site Enclosure Fence: Before construction operations begin furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.

2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to the Owner.

F. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.

G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

H. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

I. Temporary Fire Protection: Install and maintain temporary fire protection facilities of the type needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 “Standard for Portable Fire Extinguishers” and NFPA 241 “Standard for Safeguarding Construction, Alterations, and Demolition Operations.”

1. Locate fire extinguishers where convenient and effective for their intended purpose.

2. Store combustible materials in containers in fire safe locations.

3. Maintain unobstructed access to fire extinguishers, fire hydrants, and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.

4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.

3.05 MOSTURE AND MOLD CONTROL

A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.

B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.

2. Protect stored and installed material from flowing or standing water.

3. Keep porous and organic materials from coming into prolonged contact with concrete.

4. Remove standing water from decks.

5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with High organic content, into partially enclosed building.

2. Keep interior spaces reasonably clean and protected from water damage.

3. Periodically collect and remove waste containing cellulose or other organic matter.

4. Discard or replace water-damaged material.

5. Do not install material that is wet.

6. Discard, replace or clean stored or installed material that begins to grow mold.

7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.

2. Use permanent HVAC system to control humidity.

3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective.

b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record daily readings over a forty eight hour period. Identify materials containing moisture levels higher than allowed. Report findings in writing to the Design Professional.

c. Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.06 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating conditional until removal. Protect from damage 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. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, when 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 the temporary facility. Repair damaged work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Material and facilities that constitute temporary facilities are the Contractor's property. The Owner reserves the right to take possession of project identification signs.

2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. 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 the construction period. Comply with final cleaning requirements specified in Section 01 70 00 – Project Closeout.

END OF SECTION

SECTION 01 70 00
PROJECT CLOSEOUT

The requirements of the “General Conditions”, the “Supplementary Conditions”, and “Division 1” sections of the Specifications, shall apply to this section of the Specifications.

PART 1 - GENERAL

1.01 SCOPE

A. Work Included: Closeout Work shall include preparation for final acceptance, occupancy, and similar actions evidencing completion of the Work. The time of closeout is recognized to be directly related to “Substantial Completion”, and therefore may be either a single time period for the entire Work or a series of time periods for individual parts of the Work which have been certified as substantially complete at different dates. That time variation (if any) shall be applicable to other provisions of this section, regardless of whether resulting from “phased completion” originally specified by the Contract Documents or subsequently agreed upon.

1.02 PREREQUISITES FOR SUBSTANTIAL COMPLETION

A. General: Prior to Certification of Substantial Completion, submit one (1) set of the following documents to the Owner, and list known exceptions:

1. Submit statement showing final accounting of changes to the Contract Sum.

2. Advise of pending insurance change-over requirements.

3. Submit guarantees, warranties, workmanship bonds, maintenance agreements, final certifications and similar documents. Submit list of contacts, including company name, personal contact, address, telephone number and e-mail for building equipment and components which may require periodic service, including roofing, mechanical and electrical equipment.

4. Obtain and submit occupancy permits, operating certificates, final inspection/test certificates, and similar releases enabling full and unrestricted use of the Work and access to services and utilities.

5. Submit record (As-Built) Drawings, operation and maintenance manuals, Subcontractor listing with address, telephone number and e-mail, final Project photographs, damage or settlement survey, property survey, and similar final record information.

B. Tools, Spare Parts, and Extra Stock Materials: Deliver tools, spare parts, extra stocks of materials, and similar physical items.

C. Locks and Keys: Make final change-over of locks and transmit keys to Owner or Tenant, and advise to change-over in security provision.

D. Testing of Systems: Complete start-up testing of systems, and instruction of operating/maintenance personnel.

E. Temporary Facilities and Services: Discontinue (or change over) and remove from the Project site temporary facilities and services, along with construction tools and facilities, mock-ups, and similar elements.

F. Final Cleaning: Complete the final cleaning.

G. Exposed Finish Surfaces: Touch-up, repair, and restore marred exposed finishes.

H. Meter Readings for Temporary Utilities: Submit final meter readings for temporary utilities, measured record of stored fuel, and similar data as of the time of substantial completion or when Owner took possession of, and responsibility for, corresponding elements of the Work.

1.03 PREREQUISITES TO FUNCTIONAL COMPLETION

A. All TAB (Test, Adjust and Balance) work and the commissioning of Section 01 91 13 must be complete prior to Functional Completion, unless approved in writing by the Owner's Project Manager. Exceptions to this are the planned control system training performed after occupancy and any required seasonal or approved deferred testing. This includes for all systems, but is not limited to:

1. Completed and signed start-up and prefunctional checklist documentation.

2. Requested trend log data.

3. Submission of final approved TAB report.

4. Completion of all functional testing.

5. Required training of Owner personnel completed and approved.

6. Submission of the approved O & M manuals.

7. All identified deficiencies have been corrected or are approved by the Owner to be excepted from this milestone.

1.04 RECORD DOCUMENT SUBMITTALS

A. General: Specific requirements for record documents are indicated in individual sections of the Specifications. The general requirements are indicated in the General Conditions, with additional provisions indicated in Section 01 01 00 - General Scope of Work, and

Specification Divisions as required for Mechanical and Electrical Work, respectively. DO NOT USE record documents for construction purposes; protect from deterioration and loss in a secure fire-resistive location.

B. Record Drawings:

1. Contractors shall keep an accurate record of “As-Built” conditions as the Work progresses. Mark-up Drawings to indicate variance, at the time the variance occurs.

2. Maintain a white print set (blue line or black line) of complete Construction Documents and Shop Drawings, in clean undamaged condition, for the purpose of checking and recording all installations which vary substantially from the Work as originally shown. The records shall include changes in sizes, locations, and dimensions, as well as any resulting from Bulletins, Change Orders, or Field Orders.

3. Mark whichever Drawing is most capable of showing the “As-Built” condition fully and accurately; however, where Shop Drawings are used for mark-up, record a cross-reference at the corresponding location on the Contract Drawings.

4. Mark with red erasable pencil and, where feasible, use other colors to distinguish between variations of separate categories of Work.

5. Mechanical and Electrical Contractors shall give particular attention to concealed Work, and record all concealed mechanical and electrical services by color code. Record shall include exact locations of pipe, conduit, wire and cable, valves and all underground or otherwise concealed Mechanical and Electrical Work, properly dimensioned from adjacent building walls and with invert elevations noted. Record shall include all principal dimensions of concealed Work and any special notations such as valve numbers.

6. Obtain a complete set of reproducibles using the Architect’s original tracings and any Shop Drawings used for Record Drawings. Transfer all corrections, changes, and revisions from the job record set to the reproducibles and add to the legend “Record Drawings” and the date of printing to each reproducible. Within thirty (30) days of completion of job, print one (1) complete set of blacklines or blueprints. The reproducibles and blacklines or blueprints shall become the property of the Owner.

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

C. Maintenance Manuals:

1. Organize maintenance and operating manual information into individual binders properly identified, indexed, and thumb tabbed; such as Building Maintenance, Tile Maintenance, Roof Maintenance. Include names, addresses, telephone numbers, and e-mails of equipment vendors and Subcontractors. Submit one (1) copy to the Owner within thirty (30) days of Substantial Completion to be retained by the Owner for his records and use.

2. Include information such as emergency instructions, spare parts listing, warranties and guarantees with name, telephone number and e-mail of contact person, wiring diagrams, recommended “turn-around” cycles, inspection procedures, Shop Drawings, Product Data, names and addresses of each supplier, names and addresses of contractor and sub-contractors with contact person telephone number, e-mails, and similar applicable information.

3. Bind each manual of each set in a heavy-duty, 3-ring, vinyl-covered binder (not less than 2" capacity), and include pocket folders for folded sheet information. Mark identification on the front and spine of each binder.

1.05 CLOSEOUT PROCEDURES

A. General Operating/Maintenance Instructions: Arrange for each installer of Work requiring continuing maintenance or operation, to meet with personnel at the Project site to provide instructions needed for proper operation and maintenance of all equipment or components.

1. Include instructions by manufacturer’s representatives where installers are not expert in the required procedures.

2. Review maintenance manuals, record documentation, tools, spare parts and materials, lubricants, fuels, identification system, control sequences, hazards, cleaning and similar procedures and facilities.

3. For operational equipment, demonstrate start-up, shut-down, emergency operations, noise and vibration adjustments, safety, economy/efficiency adjustments, and similar operations.

4. Review maintenance and operations in relation with applicable guarantees, warranties, agreements to maintain, bonds, and similar continuing commitments.

1.06 FINAL CLEANING

A. General: Provide cleaning for specific units of Work as specified within the Specifications Sections listed under the Table of Contents in the Project Manual. Provide final cleaning of the Work, at the time indicated, consisting of cleaning each surface or unit of Work to the

normal “clean” condition expected for a first-class building cleaning and maintenance program. Comply with manufacturers' instructions for cleaning operations.

B. Cleaning Requirements: The following are examples, but not by way of limitation, of the cleaning levels required, including removing all marks, stains, soil, and fingerprints from all completed Work.

1. Remove manufacturer’s or contractor’s labels which are not required as permanent. Remove protective coverings and tags, except for those required to demonstrate compliance with building codes, fire-ratings and testing. Also remove all residue and glue remaining on the surface.

2. Clean transparent and reflective glass materials, including window/door glass and mirrors with ammonia-type, non-streaking glass cleaner, to a polished condition, removing substances which are noticeable as vision-obscuring materials. Replace broken or damaged glass and mirrors.

3. Clean exposed exterior and interior hard-surface finishes, including metals, masonry, stone, concrete, painted surfaces, plastics, tile, wood, and similar surfaces, to a dirt-free condition, free of dust, stains, films and similar noticeable distracting substances. Except as otherwise indicated; avoid the disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.

4. Wipe surfaces of mechanical and electrical equipment clean, and remove excess lubrication and other substances. Change filters within HVAC equipment.

5. Remove debris and surface dust from limited-access spaces including roofs, plenums, trenches, manholes, attics and similar spaces.

6. Clean concrete floors in non-occupied spaces broom clean.

7. Vacuum clean soft material surfaces, such as carpeted and similar surfaces.

8. Clean, sanitize and polish all fixtures, and washable surfaces in the Toilet Rooms. Clean plumbing fixtures to a sanitary condition, free of stains including those resulting from water exposure.

9. Damp wipes and cleans all fixtures, including light fixtures and lamps so as to function with full efficiency. Replace burned-out or broken lamps.

10. Wash, clean and polish all porcelain and/or ceramic tile surfaces.

11. Remove and dispose of all trash, scraps, packing, and all other construction debris.

12. Clean Project site (yard and grounds), including landscape, development areas, of litter and foreign substances. Sweep paved areas to a broom-clean condition;

remove stains, petro-chemical spills and other foreign deposits. Rake grounds which are neither planted nor paved, to a smooth, even-textured surface.

C. Damages: Any damage caused by Contractors with cleaning equipment shall be repaired or replaced by the Contractor responsible for the damage.

D. Time of Final Cleaning: Following Certification of “Substantial Completion”.

1.07 PEST CONTROL

A. Engage an experienced exterminator to make a final inspection of the Project, and to eliminate the Project of rodents, insects, and other pests. Comply with governing regulations and applicable health and safety standards.

1.08 REMOVAL OF PROTECTION

A. Except as otherwise indicated or requested, remove temporary protection devices and facilities which were installed during the course of the Work to protect previously completed Work during the remainder of the construction period.

1.09 COMPLIANCES

A. Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at the site, or bury debris or excess materials on the Owner’s property, or discharge volatile or other harmful or dangerous materials into drainage systems; remove waste materials from the site and dispose of in a lawful manner. At no time during or at completion of construction, place any excess material, into Owner’s compactor or container.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 73 00
EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.

2. Field engineering and surveying.

3. Installation of the Work.

4. Cutting and patching.

5. Coordination of Owner-installed products.

6. Progress cleaning.

7. Starting and adjusting.

8. Protection of installed construction.

9. Correction of the Work.

B. Related Requirements:

1. Section 01 33 23 "Shop Drawings and Samples". Revise first subparagraph below to suit Project.

2. Section 01 70 00 "Project Closeout" Procedures for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

3. Section 078456 and 079000 for patching penetrations in fire-rated construction.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For land surveyor professional engineer.

B. Certificates: Submit certificate signed by land surveyor professional engineer certifying that location and elevation of improvements comply with requirements.

C. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:

1. Extent: Describe reason for and extent of each occurrence of cutting and patching.

2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.

3. Products: List products to be used for patching and firms or entities that will perform patching work.

4. Dates: Indicate when cutting and patching will be performed.

5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

D. Final Property Survey: Submit 6 copies showing the Work performed and record survey data.

1.5 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.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection

2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following; but not limited to:

a. Primary operational systems and equipment.

b. Fire separation assemblies.

c. Air or smoke barriers.

d. Fire-suppression systems.

e. Mechanical systems piping and ducts.

f. Control systems.

g. Communication systems.

h. Fire-detection and -alarm systems.

i. Conveying systems.

j. Electrical wiring systems.

k. Operating systems of special construction.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or those results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:

    a. Water, moisture, or vapor barriers.

    b. Membranes and flashings.

    c. Exterior curtain-wall construction.

    d. Sprayed fire-resistive material.

    e. Equipment supports.

    f. Piping, ductwork, vessels, and equipment.

    g. Noise- and vibration-control elements and systems.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

C. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: 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, mechanical and electrical systems, 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; underground electrical services, and other utilities.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, 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. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.

2. List of detrimental conditions, including substrates.

3. List of unacceptable installation tolerances.

4. Recommended corrections.

D. 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. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

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 and Construction Manager promptly.

B. General: Engage a land surveyor professional engineer 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 limits on use of Project site.

3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.

4. Inform installers of lines and levels to which they must comply.

5. Check the location, level and plumb, of every major element as the Work progresses.

6. Notify Architect and Construction Manager when deviations from required lines and levels exceed allowable tolerances.

7. 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 rim 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.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect and Construction Manager.

3.4 FIELD ENGINEERING

A. Identification: Owner will identify existing benchmarks, control points, and property corners.

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

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect and Construction Manager. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect and Construction Manager before proceeding.

2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. 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.

D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

E. Final Property Survey: Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.

2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

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 96 inches in occupied spaces and 90 inches in unoccupied spaces.

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. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

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.

3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. 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.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 "Summary."

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to interruption to occupied areas.

G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.

5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

6. Proceed with patching after construction operations requiring cutting are complete.

H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

   a. Clean piping, conduit, and similar features before applying paint or other finishing materials.

   b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

   a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction personnel.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.

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. Pre-installation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.8 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.

3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

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 in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."

H. 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.

I. 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.

J. 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.

3.9 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.10 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.

END OF SECTION

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 subgrades for slabs-on-grade, walks, pavements, lawns, and plantings.
   2. Excavating and backfilling for buildings and structures.
   3. Drainage course for slabs-on-grade.
   4. Subbase course for concrete walks.
   5. Excavating and backfilling trenches within building lines.
   6. Excavating and backfilling trenches for buried mechanical and electrical utilities and pits for buried utility structures.

B. Related Sections include the following:
   1. Division 1 Section "Construction Facilities and Temporary Controls."
   2. Division 2 Section "Site Clearing" for site stripping, grubbing, removing topsoil, and protecting trees to remain.
   3. Division 2 Section "Excavation Support and Protection."
   4. Division 15 and 16 Sections for excavating and backfilling buried mechanical and electrical utilities and buried utility structures.

1.3 DEFINITIONS

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

B. Base Course: Layer placed between the subbase course and asphalt paving.

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

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

E. Excavation: Removal of material encountered above subgrade elevations.
   1. Additional Excavation: Excavation below subgrade elevations as directed by Engineer. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
   2. Bulk Excavation: Excavations more than 10 feet in width and pits more than 30 feet in either length or width.
   3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

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

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

H. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

I. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 SUBMITTALS

A. Product Data: For the following:
   1. Each type of plastic warning tape.
   2. Drainage fabric.

B. Samples: For the following:
   1. 10-lb samples, sealed in airtight containers, of each proposed soil material from on-site or borrow sources.

C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
   1. Classification according to ASTM D 2487 of each on-site or borrow soil material proposed for fill and backfill.

2. Laboratory compaction curve according to ASTM D 698 for each on-site or borrow soil material proposed for fill and backfill.

1.5 QUALITY ASSURANCE

A. Comply with applicable requirements of NFPA 495, "Explosive Materials Code."

B. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

C. Pre-excavation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."

1.6 PROJECT CONDITIONS

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

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D 2487 soil classification groups SC, GC, CL, or a combination of these group symbols; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: ASTM D 2487 soil classification groups GC, GM, SC, SM, ML, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.
1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Backfill and Fill: Satisfactory soil materials.

E. Sub-base: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2- inch sieve and not more than 12 percent passing a No. 200 sieve.

F. Base: 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.

G. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

H. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

I. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:
1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

B. Drainage Fabric: Nonwoven geotextile, specifically manufactured as a drainage geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:
1. Grab Tensile Strength: 110 lbf; ASTM D 4632.
2. Tear Strength: 40 lbf; ASTM D 4533.
3. Puncture Resistance: 50 lbf; ASTM D 4833.
4. Water Flow Rate: 150 gpm per sq. ft.; ASTM D 4491.

5. Apparent Opening Size: No. 50; ASTM D 4751.

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 ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.3 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavation to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.4 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for 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.
2. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended for bearing surface.

3.5 EXCAVATION FOR WALKS

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

3.6 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and 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: 12 inches on each side of pipe or conduit.

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 projecting stones and sharp objects along trench subgrade.

1. For pipes and 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. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

3.7 APPROVAL OF SUBGRADE

A. Notify Architect when excavations have reached required subgrade.

B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

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

C. Proof roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect.

3.8 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Architect.
   1. Fill unauthorized excavations under other construction or utility pipe as directed by Architect.

3.9 STORAGE OF SOIL MATERIALS

A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

3.10 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:
   1. Construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
   2. Surveying locations of underground utilities for record documents.
   3. Inspecting and testing underground utilities.
   4. Removing concrete formwork.
   5. Removing trash and debris.
   6. Removing temporary shoring and bracing, and sheeting.
   7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

3.11 UTILITY TRENCH BACKFILL

A. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

B. Backfill trenches excavated under footings and within 18 inches of bottom of footings; fill with concrete to elevation of bottom of footings.

C. Place and compact initial backfill of 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. Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.

F. Place and compact final backfill of satisfactory soil material to final subgrade.

G. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.12 FILL

A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.

B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

C. Place and compact fill material in layers to required elevations as follows:
   1. Under grass and planted areas, use satisfactory soil material.
   2. Under walks and pavements, use satisfactory soil material.
   3. Under steps and ramps, use engineered fill.
   4. Under building slabs, use engineered fill.
   5. Under footings and foundations, use engineered fill.

3.13 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, frozen, or contain frost or ice.
   2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.14 COMPACTION OF BACKFILLS AND FILLS

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, and uniformly along the full length of each structure.

C. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:

D. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
   1. Under structures, building slabs, steps, and pavements, scarify and recompact top 6 inches of existing subgrade and each layer of backfill or fill material at 95 percent.
   2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 95 percent.
   3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 85 percent.

3.15 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 adjacent existing grades and new grades.
   2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
   1. Walks: Plus or minus 1 inch.
   2. Pavements: Plus or minus 1/2 inch.

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.16 SUBBASE AND BASE COURSES

A. Under pavements and walks, place subbase course on prepared subgrade and as follows:
   1. Place base course material over subbase.
   2. Compact subbase and base courses at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.
   3. Shape subbase and base to required crown elevations and cross-slope grades.
   4. When thickness of compacted subbase or base course is 6 inches or less, place materials in a single layer.
   5. When thickness of compacted subbase or base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

3.17 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.

D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
   1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.
   2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet or less of wall length, but no fewer than two tests.
   3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150 feet or less of trench length, but no fewer than two tests.

E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.18 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
   1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

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

3.19 DISPOSAL OF SURPLUS AND WASTE MATERIALS

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

END OF SECTION 02300

SECTION 02311
ROUGH GRADING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Cutting, grading, filling, rough contouring, compacting, and shaping the site around the area ways.

1.2 RELATED SECTIONS

A. Section 01400 – Quality Requirements.
B. Section 02200 – Earthwork

1.3 REFERENCES

A. ASTM C136 - Method For Sieve Analysis of Fine and Coarse Aggregates.
B. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.
C. ASTM D2419 - Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
D. ASTM D2434 - Test Method for Permeability of Granular Soils (Constant Head).
E. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C136.

1.5 PROJECT RECORD DOCUMENTS

A. Submit under provisions of Section 01700.
B. Accurately record actual locations of utilities remaining by horizontal dimensions.

PART 2 PRODUCTS

2.1 MATERIALS

A. Subsoil Fill: Common sandy loam typical to the agricultural area.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify site conditions under provisions of Section 01039.
B. Verify that survey bench mark and intended elevations for the Work are as indicated.

3.2 PREPARATION

A. Identify required lines, levels, contours, and datum.
B. Stake and flag locations of known utilities.
C. Locate, identify, and protect utilities that remain, from damage.
D. Notify utility company to remove and relocate utilities to allow for the improvements to proceed.
E. Protect above and below grade utilities that remain.
F. Protect plant life, lawns, and other features remaining as a portion of final landscaping.
G. Protect bench marks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.3 FILLING

A. Install Work in accordance with designated requirements.
B. Fill areas to contours and elevations with soil materials.
C. Place fill material on continuous layers and compact.
D. Maintain optimum moisture content of fill materials to attain required compaction density.
E. Slope grade away from building minimum 2 inches in 10 ft unless noted otherwise.
F. Make grade changes gradual. Blend slope into level areas.

3.4 TOLERANCES

A. Top Surface of Subgrade: Plus or minus 6 inches from required elevation.

3.5 FIELD QUALITY CONTROL

A. Section 01400 - Quality Requirements: Field inspection and testing for compaction. Compact to minimum 95 percent of maximum density.

END OF SECTION

SECTION 03100
CONCRETE FORMS AND ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Formwork for cast-in place concrete, shoring, bracing and anchorage for the south entrance and ramp and sidewalks.
B. Form accessories.
C. Form stripping.

1.2 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

A. Section 03300 – Cast-In-Place Concrete: Placement of concrete accessories.
B. Section 05500 – Metal Fabrications: Placement of metal fabrications.
C. Division Fifteen: Placement of mechanical items.
D. Division Sixteen: Placement of electrical items.

1.3 RELATED SECTIONS

A. Section 03200 - Concrete Reinforcement.
B. Section 03300 - Cast-In-Place Concrete.
C. Section 03350 - Concrete Finishing.

1.4 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.
B. ACI 318 - Building Code Requirements for Reinforced Concrete.
C. ACI 347 - Recommended Practice For Concrete Formwork.
D. ANSI/ASTM A17.1 - Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks.
E. PS 1 - Construction and Industrial Plywood.

1.5 DESIGN REQUIREMENTS

A. Design, engineer and construct formwork, shoring and bracing to conform to design and code requirements; resultant concrete to conform to required shape, line and dimension.

1.6 SUBMITTALS

A. Submit under provisions of Section 01300.
B. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.

1.7 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301 and 318.

1.8 REGULATORY REQUIREMENTS

A. Conform to 2000 International Building Code for fabrication, erection and removal of formwork.

1.9 COORDINATION

A. Coordinate work under provisions of section 01300.
B. Coordinate this Section with other Sections of work which require attachment of components to formwork.

PART 2 PRODUCTS

2.1 WOOD FORM MATERIALS

A. Plywood: Douglas Fir species; solid one side sound undamaged sheets with clean, true edges.
B. Lumber: SPF species; #2 grade; with grade stamp clearly visible.

2.2 PREFABRICATED FORMS

A. Preformed Steel Forms: Minimum 16 gauge matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
B. Glass Fiber Fabric Reinforced Plastic Forms: Matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished concrete surfaces.

2.3 FORMWORK ACCESSORIES

A. Form Ties: Removable snap-off type, metal, fixed length, cone type, with waterproofing washer. 1 inch back break dimension, free of defects that could leave holes larger than 1 inch in concrete surface.
B. Form Release Agent: Colorless mineral oil which will not stain concrete, or absorb moisture.
C. Corners: Chamfer wood strip type; 3/4 x 3/4 inch.
D. Dovetail Anchor Slot: Galvanized steel, 22 gauge thick, foam filled.
E. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.
F. Waterstops: Rubber, minimum 1,750 psi tensile strength, minimum 50 degrees F to plus 175 degrees F working temperature range,, 6 inches wide, maximum possible lengths, ribbed profile, preformed corner sections, heat welded jointing.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.2 EARTH FORMS

A. Hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete.

3.3 ERECTION – FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to over stressing by construction loads.
C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
D. Align joints and make watertight. Keep form joints to a minimum.
E. Obtain approval before framing openings in structural members which are not indicated on Drawings.
F. Provide fillet chamfer strips on external corners of beams and columns.

3.4 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings which are effected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.5 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.
B. Locate and set in place items which will be cast directly into concrete.
C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.
D. Position recessed reglets for brick veneer masonry anchors to spacing and intervals specified in Section 04820.
E. Install accessories in accordance with manufacturer's instructions, straight, level, and plumb. Ensure items are not disturbed during concrete placement.
F. Install waterstops continuous without displacing reinforcement. Heat seal joints watertight.
G. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
H. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.6 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.
B. Clean formed cavities of debris prior to placing concrete.
C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

3.7 FORMWORK TOLERANCES

A. Construct formwork to maintain tolerances required by ACI 301.
B. Construct and align formwork for elevator hoistway in accordance with ANSI/ASME A17.1.
C. Camber slabs and beams 1/4 inch per 10 feet in accordance with ACI 301.

3.8 FIELD QUALITY CONTROL

A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.

3.9 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

END OF SECTION

SECTION 03151
CONCRETE ANCHORING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. General purpose anchors for horizontal and vertical applications.
B. Adhesive anchors and inserts.
C. Suspended ceiling hanger anchors.
D. Anchors for light duty horizontal applications where holding power is not critical.
E. Deck inserts for threaded rods or bolts.

1.2 RELATED SECTIONS

A. Section 03300 - Cast-in-Place Concrete: Concrete that anchors are to be installed in, and other types of cast in place inserts.
B. Section 04810 - Unit Masonry Assemblies: Masonry that anchors are to be installed in.
C. Section 05120 - Structural Steel: Steel members that anchors are to be installed in.

1.3 REFERENCES

A. ASTM A 193/A 193M - Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service; 2001b.
B. ASTM A 194/A 194M - Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure or High-Temperature Service, or Both; 2001a.
C. ASTM A 307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength; 2000.
D. ASTM A 563 - Standard Specification for Carbon and Alloy Steel Nuts; 2000.
E. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2001b.
F. ASTM B 633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 1998.
G. ASTM B 695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel; 2000.
H. ASTM C 881 - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 1999.
I. ASTM F 436 - Standard Specification for Hardened Steel Washers; 1993 (Reapproved 2000).
J. ASTM F 593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs; 2002.
K. SAE J429 - Mechanical and Material Requirements for Externally Threaded Fasteners; Society of Automotive Engineers; 1999.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Sizes, locations, and spacing.
   2. Installation methods.
C. Engineering Design Data: For each structural application, provide data substantiating specified design requirements, signed by design engineer.

1.5 PROJECT CONDITIONS

A. For adhesive anchors, maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Powers Fasteners, Inc; 2 Powers Square, New Rochelle, NY 10801. ASD. Tel: (914) 235-6300. Fax: (914) 576-6483. www.powers.com.
B. Substitutions: Not permitted.
C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 MATERIALS

A. Concrete Anchors - General: Select type and size to achieve required loading capacity using information provided by manufacturer.
   1. If required type is not indicated, select type appropriate to conditions and item being fastened.
   2. If required loading capacity is not indicated on the drawings, determine required loading capacity in

accordance with accepted engineering principles and as required by applicable code.

3. For structural applications, provide engineering design by professional engineer licensed in the State in which the project is located.
4. Use recommended and appropriate safety factors and load reduction factors.
5. For non-structural applications, space anchors as required to support the material being anchored without sagging or deformation.

B. Anchors for Horizontal Light Duty Applications Where Holding Power is Not Critical: Use one of the following:

1. Acceptable Product: Bantam Plug or Fluted Plastic Anchor; injection molded plastic expansion sleeve for sheet metal and wood screws.
2. Acceptable Product: Scru-Lead; tubular lead alloy with flange, for sheet metal and wood screws.
3. Acceptable Product: Fiberplug; tubular shaped braided jute fiber screw anchor with antimonial lead lining, for sheet metal and wood screws.
4. Acceptable Product: Hammer Drive Pins; 1/4 inch (6 mm) diameter knob head pin with 0.14 inch (3.5 mm) shank and 3/8 inch (9.5 mm) diameter washer as tool guide; heat treated carbon steel, plated in accordance with ASTM B 633, SC1, Type III.
5. Acceptable Product: Calk-In; tool-set expansion type, pre-assembled antimonial lead alloy calking sleeve and Zamac alloy internally-threaded expander cone, into which machine bolt or screw is inserted and tightened.
6. Acceptable Product: Lag Shield; Zamac alloy screw style anchor for lag bolts.
7. Acceptable Product: Single; expansion type pre-assembled machine bolt anchor with Zamac alloy expansion shield and internally threaded expander cone.
8. Acceptable Product: Double; dual expansion type pre-assembled machine bolt anchor with twin tubular sleeves bound together with high tension spring steel bands that contain two protruding wedge shaped cones; Zamac alloy.
9. Acceptable Product: Nylon Nailin; driven type, pre-assembled nail drive anchor with nylon body.
    a. Mushroom head carbon steel nail plated in accordance with ASTM B 633, SC1, Type III.
    b. Flat head carbon steel nail plated in accordance with ASTM B 633, SC1, Type III.
    c. Round head carbon steel nail plated in accordance with ASTM B 633, SC1, Type III.
    d. Mushroom head Type 304 stainless steel nail.
10. Acceptable Product: Zamac Nailin; driven type, pre-assembled nail drive anchor with Zamac alloy body.
    a. Mushroom head; carbon steel nail plated in accordance with ASTM B 633, SC1, Type III.
    b. Flat head; carbon steel nail plated in accordance with ASTM B 633, SC1, Type III.
    c. Mushroom head; Type 304 stainless steel nail.

C. Deck Inserts: For installation through deck or forms prior to placement of concrete; different diameters color coded for threaded rods or bolts in sizes from 1/4 inch (6 mm) to 3/4 inch (19 mm) diameter; six-sided impact plate providing resistance to rotation; heat treated carbon steel insert plated in accordance with ASTM B 633.

1. For Steel Deck: Bang-It; for installation in pre-drilled holes, with protective sleeve protruding below deck to prevent applied materials from clogging threads or hiding location.
2. For Wood Forms: Wood-Knocker, color coded flange on surface of concrete after stripping. Prior to pouring concrete over the wood form, place the Wood-Knocker Concrete Insert (break-off nails down) on the surface of the wood form at the desired location. Strike the impact plate of the insert with a hand held hammer, until the plastic color-coded flange is flush with the wood surface.

D. Suspended Ceiling Hanger Anchors: Tie-wire head; use one of the following:

1. Acceptable Product: The Power-Stud; (formerly known as the Rawl-Stud), one piece, wedge type expansion anchor.
    a. Mechanically galvanized carbon steel anchor body with stainless steel wedges.
    b. Stainless steel Type 304.
    c. Stainless steel Type 316.
2. Acceptable Product: Drive; driven type, pre-expanded one-piece unit, heat treated carbon steel, plated in accordance with ASTM B 633, SC1, Type III.
3. Acceptable Product: SPIKE; driven type, pre-expanded one-piece unit that develops compression forces at three different levels in bottom of anchor hole; carbon steel, Grade 8.2, plated in accordance with ASTM B 633, SC1, Type III.
4. Acceptable Product: Lok-Bolt; torqued expansion type; pre-assembled sleeve style, with triple tined expansion sleeve; carbon steel plated in accordance with ASTM B 633, SC1, Type III.

E. Vertical Rod Anchors: Rod hanger head internally threaded to accept steel threaded rod or threaded bolt; use

one of the following:

1. Acceptable Product: The Power-Stud; (formerly known as the Rawl-Stud), one piece, wedge type expansion anchor.
   a. Mechanically galvanized carbon steel anchor body with stainless steel wedges.
   b. Stainless steel Type 304.
   c. Stainless steel Type 316.
2. Acceptable Product: Rod Hanger Lok-Bolt; torqued expansion type; pre-assembled sleeve style, with triple tined expansion sleeve; carbon steel plated in accordance with ASTM B 633, SC1, Type III.
3. Acceptable Product: Vertigo; hardened carbon steel plated in accordance with ASTM B 633, SC1, Type III.
   a. For Wood: Thread forming wood screw; either vertical or side mounting of rod/bolt.
   b. For Steel: Self-drilling, self-tapping screw; either vertical or side mounting of rod/bolt.
   c. For Concrete: Double lead threaded bolt with integral washer, to be installed in hole pre-drilled using matched tolerance bit; vertical mounting of rod/bolt.

F. Capsule Adhesive Anchors: Combination capsule adhesive and hardware; Chem-Stud; chisel pointed threaded rod, reinforcing bar (by Contractor), or internally threaded insert, installed into pre-drilled anchor hole using rotary hammer drill, crushing glass capsule containing two part epoxy acrylate resin (vinyl ester) with quartz aggregate and hardening agent, forming adhesive mortar.

1. ASTM A307, carbon steel, chisel pointed threaded rod.
2. ASTM A193, grade B7, chisel pointed threaded rod.
3. Type 304 stainless steel, chisel pointed threaded rod.
4. Carbon steel, internally threaded inserts.

G. Capsule Adhesive Anchors: Combination capsule adhesive and hardware; Hammer-Capsule; threaded rod or reinforcing bar (by Contractor), driven into pre-drilled anchor hole, crushing glass capsule containing two part epoxy acrylate resin (vinyl ester) with quartz aggregate and hardening agent, forming adhesive mortar; not requiring spinning action or special tools to mix adhesive.

1. Capsule shelf life of two years, minimum.
2. Threaded Rod: ASTM A 307, carbon steel plated in accordance with ASTM B 633, SC1, with Type III clear chromate treatment.
3. Threaded Rod: ASTM A 193 Grade B7, ASTM A 194 Grade 2H or ASTM A 563 Grade DH nuts, and ASTM F 436 washers; plated in accordance with ASTM B 633, SC1, with Type II yellow chromate treatment.
4. Threaded Rod: Type 304 stainless steel, passivated.

H. Injection Adhesive: Type recommended by manufacturer for application and use, rated for loadings and anchored items required.

1. Acceptable Product: AC100 PLUS; two component, all weather, high performance, zero VOC, epoxy acrylate, complying with descriptive requirements of ASTM C 881, Type IV, Grade 3, Classes A, B, and C, except for gel time; mixed and dispensed through motionless, static mixing nozzle and dispensing tool; shelf life of 18 months, minimum.
2. Acceptable Product: Power-Fast Plus; two component, structural grade, odorless amine based epoxy resin, complying with ASTM C 881, Types I, II, IV, and V, Grade 3, Classes B and C; mixed and dispensed through motionless static mixing nozzle; shelf life of two years, minimum, NSF 61 approved.

I. Anchors and Inserts for Drilled Anchor Holes with Injection Adhesive:

1. Threaded Rod: ASTM A 307, carbon steel plated in accordance with ASTM B 633, SC1, with Type III clear chromate treated.
2. Threaded Rod: ASTM A 193 Grade B7, ASTM A 194 Grade 2H or ASTM A 563 Grade DH nuts, and ASTM F 436 washers; plated in accordance with ASTM B 633, SC1, with Type II yellow chromate treatment.
3. Threaded Rod: Type 304 stainless steel, passivated.
4. Reinforcing Bars: ASTM A 615/A 615M, Grade 60.

J. General Purpose Anchors: Use one of the following:

1. Acceptable Product: Wedge-Bolt; one piece screw anchor with finished hex head with integral washer, double lead thread, chamfered tip, ratchet teeth on underside of head to be installed in hole pre-drilled using matched tolerance bit; head stamped with diameter and length.

a. Carbon Steel Wedge-Bolt installed with Wedge-Bit. Plated in accordance with ASTM B 633, SC1, Type III.
b. Carbon Steel Wedge-Bolt installed with ANSI Drill Bit. Plated in accordance with ASTM B 633, SC1, Type III.
c. Type 410 Stainless Steel Wedge-Bolt installed with Wedge-Bit.

2. Acceptable Product: Power-Bolt; torque-controlled, self-undercutting type; pre-assembled heavy duty sleeve style, with internal bolt, nylon compression ring, expansion cone with oversized annular ring that expands to undercut the base material.
   a. Hex head, Grade 5 carbon steel, plated in accordance with ASTM B 633, SC1, Type III.
   b. Flat head, Grade 5 carbon steel, plated in accordance with ASTM B 633, SC1, Type III.
   c. Type 303 or 304 stainless steel, ASTM F 593 hex head.
3. Acceptable Product: Power-Stud; torque-controlled, wedge type; one piece body with expansion mechanism consisting of two interlocking independent wedges; head marked with length code; for installation by driving into same diameter hole and expanding by turning nut.
   a. Carbon steel anchor body and wedges, plated in accordance with ASTM B 633, SC1, Type III.
   b. Mechanically galvanized carbon steel anchor body with stainless steel wedges.
   c. Type 304 stainless steel anchor body and wedges.
   d. Type 316 stainless steel anchor body and wedges.
4. Acceptable Product: Lok-Bolt; torque-controlled, expansion type; pre-assembled sleeve style, with nylon compression ring and triple tined expansion sleeve.
   a. Carbon steel plated in accordance with ASTM B 633, SC1, Type III.
   b. Stainless steel.
   c. Head: Hex nut.
   d. Head: Acorn nut.
   e. Head: Round head.
   f. Head: Flat head.
5. Acceptable Product: Set-Bolt; driven deformation type, one piece stud style anchor with bottom-bearing external expansion plug; carbon steel plated in accordance with ASTM B 633, SC1, Type III; attached fixture secured with nut and washer on exposed screw threads.
6. Acceptable Product: SPIKE; driven deformation type, pre-expanded one-piece unit that develops compression forces at three different levels in bottom of anchor hole.
   a. Carbon Steel, Mushroom Head.
   b. Carbon Steel, Flat Head.
   c. Type 316 Stainless Steel, Mushroom Head.
   d. Carbon Steel Pipe Spike.
   e. Carbon Steel Tie Wire.
7. Acceptable Product: Drive; driven deformation type, pre-expanded one-piece unit, heat treated carbon steel, plated in accordance with ASTM B 633, SC1, Type III.
   a. Head: Round (tamperproof).
   b. Head: Flat (tamperproof).
8. Acceptable Product: Zamac HAMMER-SCREW; driven deformation type, pre-assembled nail drive anchor with mushroom style head and Zamac alloy body; Phillips screw head for removal.
   a. Carbon steel screw plated in accordance with ASTM B 633, SC1, Type III.
   b. Type 304 stainless steel screw.
9. Acceptable Product: Zamac NAILIN; driven deformation type, pre-assembled nail drive anchor with Zamac alloy body.
   a. Zinc alloy, mushroom head, carbon steel drive pin.
   b. Zinc alloy, flat head, carbon steel drive pin.
   c. Zinc alloy, mushroom head, stainless steel drive pin.
10. Acceptable Product: Nylon NAILIN; driven deformation type, pre-assembled nail drive anchor with nylon body.
    a. Nylon, round head, carbon steel drive pin.
    b. Nylon, flat head, carbon steel drive pin.
    c. Nylon, mushroom head, carbon steel drive pin.
    d. Nylon, mushroom head, stainless steel drive pin.
11. Acceptable Product: TAPPER; one-piece screw anchor.
    a. Carbon steel with white Perma-Seal fluoropolymer coating.

b. Carbon steel with blue Perma-Seal fluoropolymer coating.
c. Carbon steel with silver Perma-Seal fluoropolymer coating.
d. Carbon steel with bronze Perma-Seal fluoropolymer coating.
e. Type 304 stainless steel.
f. Type 410 stainless steel.
g. Carbon steel. Zinc plated
h. Head: Hex washer.
i. Head: Flat Phillips.

12. Acceptable Product: Hollow-Set Dropin; tool-set expansion type, pre-assembled tapered slotted expansion sleeve of Zamac alloy with threaded steel expansion cone, into which machine bolt is inserted and tightened.
    a. Expansion Cone: Plated in accordance with ASTM B 633, SC1, Type III.
    b. Expansion Cone: Type 304 stainless steel.
13. Acceptable Product: Steel Dropin; tool-set expansion type, pre-assembled shell style with internal expansion plug, into which machine bolt is inserted and tightened.
    a. Carbon steel, smooth wall
    b. Carbon steel, flange (lipped).
    c. Carbon steel, coil thread.
    d. Type 303 stainless steel, smooth wall.
    e. Type 316 stainless steel, smooth wall.
14. Acceptable Product: Mini Dropin; tool-set expansion type, pre-assembled shell style with internal expansion plug, into which machine bolt is inserted and tightened; embedment of 3/4 inch (19 mm) maximum; carbon steel plated in accordance with ASTM B 633, SC1, Type III. Sizes as required for application.
    a. Size: 1/4 inch (6 mm).
    b. Size: 3/8 inch (9.5 mm).
    c. Size: 1/2 inch (12 mm).
    d. As required.
15. Acceptable Product: Powder actuated drive pins and threaded studs, with guide washers or flutes; for standard low-velocity installation tools.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions and recommendations and as required by applicable code.
B. Apply anchor items neatly, with anchor mounted plumb and level unless otherwise indicated.

3.4 FIELD QUALITY CONTROL

A. The Architect/Engineer reserves the right to require the anchor manufacturer's representative to demonstrate proper installation procedures for post-installed anchors and to observe Contractor's installation procedures, at no extra cost to Owner.
B. The Architect/Engineer reserves the right to require pullout or shear tests to determine adequacy of anchors, at no extra cost to Owner

END OF SECTION

SECTION 03200
CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Reinforcing steel bars, wire fabric and accessories for cast-in-place.

1.2 RELATED SECTIONS

A. Section 03100 – Concrete Forms and Accessories.
B. Section 03300 – Cast-In-Place Concrete.
C. Section 04230 – Reinforced Concrete Unit Masonry.

1.3 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.
B. ACI 318 - Building Code Requirements for Reinforced Concrete.
C. ACI SP-66 - American Concrete Institute - Detailing Manual.
D. ANSI/ASTM A82 - Cold Drawn Steel Wire for Concrete Reinforcement.
E. ANSI/ASTM A184 - Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
F. ANSI/ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
G. ANSI/AWS D1.4 - Structural Welding Code for Reinforcing Steel.
H. ASTM A615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
I. AWS D12.1 - Welding Reinforcement Steel, Metal Inserts and Connections in Reinforced Concrete Construction.
J. CRSI - Concrete Reinforcing Steel Institute - Manual of Practice.
K. CRSI 63 - Recommended Practice For Placing Reinforcing Bars.
L. CRSI 65 - Recommended Practice For Placing Bar Supports, Specifications and Nomenclature.

1.4 SUBMITTALS

A. Submit under provisions of Section 01330
B. Shop Drawings: Indicate bar sizes, spacings, and locations and quantities of reinforcing steel and wire fabric, bending and cutting schedules, and supporting and spacing devices.
C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with CRSI - Manual of Standard Practice ACI 301, ACI SP-66, ACI 318.
B. Maintain one copy of each document on site.
C. Submit certified copies of mill test report of reinforcement materials analysis.
D. Provide Architect/Engineer with access to fabrication plant to facilitate inspection of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection.

1.6 QUALIFICATIONS

A. Welders' Certificates: Submit under provisions of Section 01400 Manufacturer's Certificates, certifying welders employed on the Work, verifying AWS qualification within the previous 12 months.

1.7 COORDINATION

A. Coordinate work under provisions of Section 01300.
B. Coordinate with placement of formwork, formed openings and other Work.

PART 2 PRODUCTS

2.1 REINFORCEMENT

A. Reinforcing Steel: ASTM A615, 60 ksi yield grade; deformed billet steel bars, unfinished.
B. Reinforcing Steel Plain Bar and Rod Mats: ASTM A704, ASTM A615, Grade 60; steel bars or rods, unfinished.
C. Stirrup Steel: ANSI/ASTM A82, unfinished.
D. Welded Steel Wire Fabric: ASTM A185 in flat sheets ; unfinished.

2.2 ACCESSORY MATERIALS

A. Tie Wire: Minimum 16 gauge annealed type.
B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor barrier puncture. Brick batts may be used at slab on grade; 1/2 brick minimum.

2.3 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI Manual of Practice, ACI SP-66, ACI 318, and ANSI/ASTM A184.
B. Locate reinforcing splices not indicated on drawings, at point of minimum stress. Review location of splices with Architect/Engineer.

PART 3 EXECUTION

3.1 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position.

B. Do not displace or damage vapor barrier.
C. Accommodate placement of formed openings.
D. Maintain concrete cover around reinforcing as indicated on structural drawings.
E. Conform to applicable code and plans for concrete cover over reinforcement.
F. Bond and ground all reinforcement to requirements of Division 16.

3.2 FIELD QUALITY CONTROL

A. Field inspection will be performed under provisions of Section 01400.

3.3 SCHEDULES

A. Reinforcement for Foundation Wall, Framing Members and Slab-on-Grad: Deformed bars.

END OF SECTION

SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Extent of concrete work is shown on drawings.

1.3 SUBMITTALS

A. Product Data: Submit data for non-proprietary materials and items, including admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others as requested by Architect.

B. Shop Drawings; Reinforcement: Submit original shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACT 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, diagrams of bent bars, arrangement of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:
   1. ACT 301 "Specifications for Structural Concrete for Buildings".
   2. ACT 318 "Building Code Requirements for Reinforced Concrete".
   3. Concrete Reinforcing Steel Institute (CRSI), "Manual of Standard Practice".

B. Materials and installed work may require testing and retesting at anytime during progress of work. Retesting of rejected materials for installed work, shall be done at Contractor's expense.

1.5 PROJECT CONDITIONS

A. Protect adjacent finish materials against spatter during concrete placement.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I, "Alamo Cement" or equal. Use one brand of cement throughout project, unless otherwise acceptable to Architect.

B. Normal Weight Aggregates: ASTM C 33, and as herein specified. Provide aggregates from a single source for exposed concrete.
   1. For exterior exposed surfaces, do not use fine or coarse aggregates containing spalling-causing deleterious substances.
   2. Local aggregates not complying with ASTM C 33 but which have shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to Architect.

C. Water: Drinkable.

D. Water-reducing Admixture: ASTM C 194, Type A, and containing not more than 0.1 percent chloride ions.
   1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
      a) "WRDA Hycol"; W.R. Grace.
      b) "PSI N"; Gifford-Hill/American Admixtures
      c) "Eucon WR-75"; Euclid Chemical Co.
      d) "Pozzolith Normal"; Master Builders.
      e) "Plastocrete 160"; Sika Chemical Corp.
      f) "Chemtard"; Chem-Masters Corp.
      g) "Pro-Kete-N"; Protex Industries, Inc.

E. Water-Reducing, Non-Chloride Accelerator Admixture: ASTM C 494, Type E, and containing not more than 0.1 percent chloride ions.
   1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
      a) "Accelguard 80"; Euclid Chemical Co.
      b) "Pozzolith High Early"; Master Builders.
      c) "Gilco Accelerator"; Gifford-Hill/America Admixtures

F. Water-Reducing, Retarding Admixture: ASTM C 494, Type D, and containing not more than 0.1 percent chloride ions.
   1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

a) "Edoco 20006"; Edoco Technical Products.
b) "Pozzolith Retarder"; Master Builders.
c) "Eucon Retarder 75"; Euclid Chemical Co.
d) "Daratard"; W.R. Grace.
e) "PSI R"; Gifford-Hill/American Admixtures.
f) "Plastiment"; Sika Chemical Co.
g) "Protard"; Protex Industries, Inc.

G. Prohibited Admixtures: Calcium chloride thyocyanates or admixtures containing more than 0.1 percent chlorine ions are not permitted.

2.2 RELATED MATERIALS

1. None

2.3 PROPORTIONING AND DESIGN OF MIXES:

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACT 301. If trial batch method used, use an independent testing facility acceptable to Architect for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing.

B. Submit written reports to Architect and Structural Engineer of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Architect.

C. Design mixes to provide normal weight concrete with the following properties, as indicated on drawings and schedules:
1. 3000 psi 28-day compressive strength; W/C ratio, 0.58 maximum (non-air-entrained), 0.46 maximum (air-entrained). For structural slabs.

D. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in work.

E. Admixtures:
1. Use water-reducing admixture in concrete as required for placement and workability.
2. Use non-chloride accelerating admixture in concrete slabs placed at ambient temperatures below 50 deg F (10 deg C).

F. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
1. Ramps, slabs, and sloping surfaces: Not more than 5".
2. Reinforced foundation systems: Not less than 3" and not more than 5".
3. Other concrete: Not less than 3" nor more than 5".

2.4 CONCRETE MIXING

A. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as herein specified.

B. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C 94 may be required.

PART 3 EXECUTION

3.1 GENERAL

A. Coordinate the installation of joint materials and vapor retarders with placement of forms and reinforcing steel.

3.2 JOINTS:

A. Construction Joints: Locate and install construction joints as indicated or, if not indicated, located so as not to impair strength and appearance of the structure, as acceptable to Architect.

B. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints, except as otherwise indicated.

3.3 INSTALLATION OF EMBEDDED ITEMS

A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto.

B. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support types of screed strips by use of strike-off templates or accepted compacting type screeds.

3.4 CONCRETE PLACEMENT

A. Replacement Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or casting. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form coatings are not used.

B. Apply temporary protective covering to lower 2' of finished walls adjacent to poured floor slabs and similar conditions, and guard against spattering during placement.

C. General: Comply with ACT 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete", and as herein specified.
D. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation.
E. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
F. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACT 309.
G. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly space locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6" into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.
H. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.
I. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.
J. Bring slab surfaces to correct level within straightedge and strike off. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
K. Maintain reinforcing in proper position during concrete placement operations.
L. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACT 306 and as herein specified.
M. When air temperature has fallen to or is expected to fall below 40 deg F (4deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C), and not more than 80 deg F (27 deg C) at point of placement.
N. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
O. Do not use calcium chloride, salt, and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix design.
P. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACT 305 and as herein specified.
Q. Cool ingredients before mixing to maintain concrete temperature at time of placement below 95º deg F (32 deg C). Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water. Use of liquid nitrogen to cool concrete is Contractor's option.
R. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
S. Fog spray forms, reinforcing steel, and subgrade just before concrete is placed.
T. Use water-reducing retarding admixture (Type D) when required by high temperatures, low humidity, or other adverse placing conditions.

3.5 MISCELLANEOUS CONCRETE ITEMS

A. Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.
B. Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.

3.6 CONCRETE SURFACE REPAIRS:

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Architect.
B. Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.
C. For exposed-to-view surfaces blend white portland cement and standard portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

D. Repair of Formed Surfaces: Removed and replaced concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets; fins and other projections on surface; and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.
E. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.
F. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness using a template having required slope.
G. Correct high area in unformed surfaces by grinding, after concrete has cured at least 4 days.
H. Correct low areas in unformed surfaces during or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to Architect.
I. Repair defective areas, except random cracks and single holes not exceeding 1" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
J. Repair isolated random cracks and single holes not over 1" in diameter by dry-pack method. Groove top of cracks and cut-out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of one part portland cement to 2-1/2" parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Place dry pack after bonding compound has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.
K. Perform structural repairs with prior approval of Architect or Structural Engineer for method and procedure, using specified epoxy adhesive and mortar.
L. Repair methods not specified above may be used, subject to acceptance of Architect.

3.7 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. The Owner's Agent will employ a testing laboratory to perform test and to submit test reports.
B. Sampling and testing for quality control during placement of concrete shall include the following, as directed by Architect.
C. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
D. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
E. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231 pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
F. Concrete Temperature: Test hourly when air temperature is 40 deg F (4 deg C) and below, and when 80 deg F (27 deg C) and above; and each time a set of compression test specimens are required.
G. Compression Test Specimen: ASTM C 31, one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
H. Compressive Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu yds. plus additional sets for each 50 cu yds. over and above the first 25 cu. yds. of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required. When frequency of testing will provide less than 5 strength test for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.
I. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
J. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive strength by more than 500 psi.
K. Test results will be reported in writing to Architect, Structural Engineer, and Contractor within 24 hours after tests. Reports of compressive strength test shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests.

L. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.
M. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests when unacceptable concrete is verified.
N. See Structural Plans for additional requirements.

END OF SECTION

SECTION 03350
CONCRETE FINISHING

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Finishing of exposed concrete.

1.2 RELATED SECTIONS
A. Section 03100 - Concrete Forms and Accessories.
B. Section 03300 - Cast-In-Place Concrete.

1.3 REFERENCES
A. ACI 302 - Guide for Concrete Floor and Slab Construction.

1.4 SUBMITTALS
A. Submit under provisions of Section 01330.
B. Product Data: Provide data on concrete colorer, sealer, and slip resistant treatment, compatibilities, and limitations.

1.5 MAINTENANCE DATA
A. Submit under provisions of Section 01700.
B. Maintenance Data: Provide data on maintenance renewal of applied coatings.

1.6 QUALITY ASSURANCE
A. Perform Work in accordance with ACI 301 and ACI 302.
B. Maintain one copy of each document on site.

1.7 DELIVERY, STORAGE, AND HANDLING
A. Deliver, store, protect, and handle products to site under provisions of Section 01600.
B. Deliver materials in manufacturer's packaging including application instructions.

1.8 COORDINATION
A. Coordinate work under provisions of Section 01300.
B. Coordinate the work with concrete placement and curing.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 EXAMINATION
A. Verify site conditions under provisions of Section 01300. Verify that surfaces are acceptable to receive the Work of this section.

3.2 MONOLITHIC SLAB FINISHES
A. Scratch Finish: Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds for tile, portland cement terrazzo, and other bonded applied cementitious finish flooring material, and as otherwise indicated.
B. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo, and as otherwise indicated.
C. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to tolerances of F 35 - F 25. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
D. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin firm finish coating system.
E. After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface procedures a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with surface leveled to tolerances of F 35 - F 25. Grind smooth surface defects which would telegraph through applied floor covering system.
F. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply trowel finish as specified, then immediately follow with slightly scarifying surface by fine brooming.
G. Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
H. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristly broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
I. See architectural for stained concrete locations.

3.3 TOLERANCES

A. After placing slabs, plane surface to tolerances for floor flatness (F) of 35 and floor levelness (F1) of 25. Slope surfaces uniformly to drains where requires. After leveling, roughen surface before final set, with stiff brushes, brooms, or rakes.

END OF SECTION

SECTION 03390
CONCRETE CURING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Initial and final curing of horizontal concrete surfaces.

1.2 RELATED SECTIONS

A. Section 03300 – Cast-In-Place Concrete.
B. Section 03350 - Exposed Concrete Finishing.

1.3 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.
B. ACI 302 - Recommended Practice for Concrete Floor and Slab Construction.
C. ACI 308 - Standard Practice for Curing Concrete.
D. ASTM C171 - Sheet Materials for Curing Concrete.
E. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.
F. ASTM D2103 - Polyethylene Film and Sheeting.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.
B. Product Data: Provide data on curing compounds, product characteristics, compatibility and limitations.
C. Manufacturer's Installation Instructions: Indicate criteria for preparation and application.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301 and ACI 302.
B. Maintain one copy of each document on site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect, and handle products under provisions of Section 01600.
B. Deliver curing materials in manufacturer's packaging including application instructions.

PART 2 PRODUCTS

2.1 MATERIALS

A. Membrane Curing Compound Type A: ASTM C309 Type 1.
B. Polyethylene Film Type B: ASTM C171, 6 mil thick, clear.
C. Water: Potable and not detrimental to concrete.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify substrate conditions under provisions of Section 01039.
B. Verify that substrate surfaces are ready to be cured.

3.2 EXECUTION - HORIZONTAL SURFACES

A. Cure floor surfaces in accordance with ACI 308.
B. Ponding: Maintain 100 percent coverage of water over floor slab areas continuously for 4 days.
C. Spraying: Spray water over floor slab areas and maintain wet for 7 days.
D. Membrane Curing Compound: Apply curing compound in accordance with manufacturer's instructions in two coats with second coat applied at right angles to first.
E. Polyethylene Film: Spread Polyethylene Film over floor slab areas, lapping edges and sides and sealing with pressure sensitive tape; cover with plywood; maintain in place for 7 days.

3.3 PROTECTION OF FINISHED WORK

A. Protect finished Work under provisions of Section 01500.
B. Do not permit traffic over unprotected floor surface.

END OF SECTION

SECTION 04230
REINFORCED UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

B. Requirements of Section "Unit Masonry" apply to work of this section.

1.2 DESCRIPTION OF WORK:

A. Extent of each type of reinforced unit masonry work is indicated on drawings and in schedules.

1.3 SUBMITTALS:

A. Shop Drawings: Submit shop drawings for fabrication, bending, and placement of reinforcement bars. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures". Show bar schedules, diagrams of bent bars, stirrup spacing, lateral ties and other arrangements and assemblies as required for fabrication and placement of reinforcement for unit masonry work.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. General: Refer to Section "Unit Masonry" for masonry materials and accessories not included in this section.

B. Reinforcement Bars: Provide deformed bars of following grades complying with ASTM A 615, Except as otherwise indicated.

C. Provide Grade 60 for bars No. 3 to No. 18, except as otherwise indicated.

D. Shop-fabricate reinforcement bars which are shown to be bent or hooked.

PART 3 - EXECUTION

3.1 PLACING REINFORCEMENT:

A. General: Clean reinforcement of loose rust, mill scale, earth, ice, or other materials which will reduce bond to mortar or grout. Do not use reinforcement bars with kinks or bends not shown on drawings or final shop drawings, or bars with reduced cross-section due to excessive rusting or other causes.

B. Position reinforcement accurately at the spacing indicated. Support and secure vertical bars against displacement. Horizontal reinforcement may be placed as the masonry work progresses. Where vertical bars are shown in close proximity, provide a clear distance between bars of not less than the nominal bar diameter or 1" (whichever is greater).

C. For columns, piers, and pilasters, provide a clear distance between vertical bars as indicated, but not less than 1-1/2 times the nominal bar diameter or 1-1/2", whichever is greater. Provide lateral ties as indicated.

D. Splice reinforcement bars where shown; do not splice at other points unless acceptable to the Architect. Provide lapped splices, unless otherwise indicated. In splicing vertical bars of attaching to dowels, lap ends, place in contact and wire tie.

E. Provide not less than minimum lap indicated, or if not indicated, as required by governing code.

F. Embed metal ties in mortar joints as work progresses, with a minimum mortar cover of 5/8" on exterior face of walls and 1/2" at other locations.

G. Embed prefabricated horizontal joint reinforcement as the work progresses, with a minimum cover of 5/8" on exterior face of walls and 1/2" at other locations. Lap units not less than 6" at ends. Use prefabricated "L" and "T" units to provide continuity at corners and intersections. Cut and bend units as recommended by manufacturer for continuity at returns, offsets, column fire-proofing, pipe enclosures, and other special conditions.

H. Anchoring: Anchor reinforced masonry work to supporting structure they indicated.

I. Anchor reinforced masonry walls to non-reinforced masonry where they intersect.

3.2 INSTALLATION, GENERAL:

A. Refer to Section "Unit Masonry" for general installation requirements of unit masonry.

B. Temporary Formwork: Provide formwork and shores as required for temporary support of reinforced masonry elements.

C. Construct formwork to conform to shape, line, and dimensions shown. Make sufficiently tight to prevent leakage of mortar, grout, or concrete (if any).

D. Brace, tie, and support as required to maintain position and shape during

E. Construction and curing of reinforced masonry.

F. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and all other reasonable temporary loads that may be placed on them during construction.

G. Allow not less than the following minimum time to elapse after completion of members before removing shores or forms, provided suitable curing conditions have been obtained during the curing period.

a. 10 days for girders and beams.

b. 7 days for slabs.
c. 7 days for reinforced masonry soffits.

3.3 INSTALLATION OF REINFORCED CONCRETE UNIT MASONRY:

A. General:
1. Do not wet concrete masonry units (CMU).
2. Lay CMU units with full-face shell mortar beds. Fill vertical head joints (end joints between units) solidly with mortar from face of unit to a distance behind face equal to not less than the thickness of longitudinal face shells. Solidly bed cross-webs of starting courses in mortar. Maintain head and bed joint widths shown, or if not shown, provide 3/8" joints.

B. Walls:
1. Pattern Bond: Lay CMU wall units in 1/2-running bond with vertical joints in each course centered on units in courses above and below, unless otherwise indicated. Bond and interlock each course at corners and intersections. Use special-shaped units where shown, and as required for corners, jambs, sash, control joints, lintels, bond beams, and other special conditions.
2. Maintain vertical continuity of core or cell cavities, which are to be reinforced and grouted, to provide minimum clear dimension indicated and to provide minimum clearance and grout coverage for vertical reinforcement bars. Keep cavities free of mortar. Solidly bed webs in mortar where adjacent to reinforced cores or cells.
3. Where horizontal reinforced beams (bond beams) are shown, use special units or modify regular units to allow for placement of continuous horizontal reinforcement bars. Place small mesh expanded metal lath or wire screening in mortar joints under bond beam courses over cores or cells of non-reinforced vertical cells, or provide units with solid bottoms.
4. Grouting Technique: At the Contractor's option, use either low-lift or high-lift grouting techniques subject to requirements which follow.

C. Low-Lift Grouting:
1. Provide minimum clear dimension of 2" and clear area of 8 sq. in. in vertical cores to be grouted.
2. Place vertical reinforcement prior to laying of CMU. Extend above elevation of maximum pour height as required for splicing. Support in position at vertical intervals not exceeding 192 bar diameters or 10 ft.
3. Lay CMU to maximum pour height. Do not exceed 4' height, or if bond beam occurs below 4' height stop pour at course below bond beam.
4. Pour grout using chute or container with spout. Rod or vibrate grout during placing. Place grout continuously; do not interrupt pouring of grout for more than one hour. Terminate grout pours 1-1/2" below top course of pour.
5. Bond Beams: Stop grout in vertical cells 1-1/2" below bond beam course. Place horizontal reinforcement in bond beam; lap at corners and intersections as shown. Place grout in bond beam course before filling vertical cores above bond beam.

D. High-Lift Grouting:
1. Do not use high-lift grouting technique for grouting of CMU unless minimum cavity dimension and area is 3" and 10 sq. in., respectively.
2. Provide cleanout holes in first course at all vertical cells which are to be filled with grout.
3. Use units with one face shell removed and provide temporary supports for units
4. above, or use header units with concrete brick supports, or cut openings in one face shell.

E. Construct masonry to full height of maximum grout pour specified, prior to placing grout.
F. Limit grout lifts to a maximum height of 4' and grout pour to a full height of wall, unless otherwise indicated.
G. Place vertical reinforcement before grouting. Place before or after laying masonry units, as required by job conditions. Tie vertical reinforcement to dowels at base of masonry where shown and thread CMU over or around reinforcement. Support vertical reinforcement at intervals not exceeding 192 bar diameters or 10'.
H. Where individual bars are placed after laying masonry, place wire loops extending into cells as masonry is laid and loosen before mortar sets. After insertion of reinforcement bar, pull loops and bar to proper position and tie free ends.
I. Place horizontal beam reinforcement as the masonry units are laid.
J. Preparation of Grout Spaces: Prior to grouting, inspect and clean grout spaces. Remove dust, dirt, mortar droppings, loose pieces of masonry and other foreign materials from grout spaces. Clean reinforcement and adjust to proper position. Clean top surface of structural members supporting masonry to ensure bond. After final cleaning and inspection, close cleanout holes and brace closures to resist grout pressures.
K. Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist displacement of masonry units and breaking of mortar bond. Install shores and bracing, if required, before starting grouting operations.
L. Place grout by pumping into grout spaces unless alternate methods are acceptable to the Architect.

M. Limit grout pours to sections which can be completed in one working day with not more than one hour interruption of pouring operation. Place grout in lifts which do not exceed 4'. Allow not less than 30 minutes, nor more than one hour between lifts of a given pour. Rod or vibrate each grout lift during pouring operation.
N. Place grout in lintels or beams over openings in one continuous pour.
O. Where bond beam occurs more than one course below top of pour, fill bond beam course to within 1" of vertically reinforced cavities, during construction of masonry.
P. When more than one pour is required to complete a given section of masonry, extend reinforcement beyond masonry as required for splicing. Pour grout to within 1-1/2" of top course of first pour. After grouted masonry is cured, lay masonry units and place reinforcement for second pour section before grouting. Repeat sequence if more pours are required.

END OF SECTION

SECTION 05 40 00
COLD-FORMED METAL FRAMING

The requirements of the “General Conditions”, the “Supplementary Conditions”, and “Division 1” sections of the Specifications, shall apply to this section of the Specifications.

PART 1 - GENERAL

1.01 SCOPE

A. Work Included: Provide all labor, materials, equipment, and services necessary for Exterior Cold-Formed Metal Framing Work indicated on the Drawings and specified herein. Work includes, but is not limited to the following:

1. Load Bearing, Structural Metal Stud Framing.

B. Related Sections: The following items of related Work will be provided under other sections of the Specifications:

1. Indoor Air Quality Requirements - Section 01 81 19. AIR BORNE PRODUCTS

2. Unit Structural Masonry - Section 04 23 0.

3. Structural Steel - Section 05 120.

4. Metal Roof Deck - Section 05 31 0.

5. Miscellaneous Metal Work - Section 05 50 00.

6. Rough Carpentry - Section 06 10 00.

7. Roof and Wall Specialties and Accessories - Section 07 70 00.

8. Aluminum Framed Entrances and Storefronts - Section 08 41 13.

9. Gypsum Wallboard - Section 09 29 00.

A. Codes and Reference Specifications: Except as otherwise specified herein, materials and workmanship shall conform to the following current codes and specifications.

1. American Institute of Steel Construction, Inc., AISC Steel Construction Manual.

2. American Welding Society (AWS):

a. D1.1, Structural Welding Code - Steel.

b. D1.3, Structural Welding Code - Sheet Steel.

3. American Iron and Steel Institute (AISI) - North American Cold-Formed Steel Specification 2001 Edition with 2004 Supplement.

4. ASTM International Standard Specifications:

   a. ASTM A653 - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process. (Formerly ASTM Standard A446.)

   b. ASTM A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

   c. ASTM A1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened and Bake Hardenable. (Formerly ASTM Standard A611.)

   d. ASTM A1011 - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low Alloy, High-Strength Low Alloy with Improved Formability, and Ultra-High Strength. (Formerly ASTM Standard A570.)

   e. ASTM C955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases.

5. Connections tested per American Iron and Steel Institute (AISI) Standards.

6. All applicable governing Rules, Regulations, Building Codes and Ordinances.

B. The following minimum factors of safety shall be applied to the ultimate values of fastenings:

1. Welded Connections: Per AISI and AWS.

2. Powder Driven Fasteners into Steel: 5.0.

3. Powder Driven Fasteners into Concrete: 10.0.

4. Drilled, Tapped-In, and/or Expansion Anchors: 5.0.

5. Self-Tapping Screws: 4.0.

6. Pop Rivets: 4.0.

1.03 QUALITY ASSURANCE

A. Environmental Requirements: Paint products shall comply with all applicable Federal and State Regulations on Volatile Organic Compounds (VOC).

B. Environmental Requirements: Paint products such as touch-up field painting and isolation coatings shall comply with all applicable Federal and State Regulations on Volatile Organic Compounds (VOC). PAINT

1.04 CERTIFICATION OF WELDERS

A. PRIOR to starting Work, furnish to the Architect, valid certification qualified by a recognized, independent laboratory, for all welders working on fabrication and erection. All welding shall be performed by welders who have qualified by tests in accordance with AWS “Standard Qualification Procedure”, to perform the type of Work required.

1.05 SUBMITTALS

A. General: Submit Shop Drawings and Product Data to the Architect for review in accordance with the requirements in Section 01 33 23 - Shop Drawings and Samples, and as specified herein.

B. Reports: Submit test reports, procedure specifications and certifications as required to substantiate welded connections design and welding qualifications to the Owner’s Representative and the General Contractor for review.

C. General: Prior to fabrication of framing, the Contractor shall submit Shop Drawings and Product Data, including fabrication and erection drawings, to the Architect for review in accordance with the requirements in Section 01 33 23 - Shop Drawings and Samples, and as specified herein.

1. Include placing drawings for framing members showing size and gauge designations, number, type, location and spacing. Indicate supplemental strapping, bracing, splices, accessories, and details required for proper installation. Design and detail all connections to structural steel, structural concrete, and/or masonry.

2. Indicate all member gauges, spacings and sizes. Sizes and spacings shown on the Drawings are minimums, Contractor shall design all members. Contractor shall increase gauge or decrease spacings to comply with actual design load requirements.

3. All Shop Drawings and calculations shall be sealed by a Professional Structural Engineer licensed in the State of the proposed Project with a minimum of five (5) years experience in the design of light gauge framing.

D. Structural Calculations: Submit full structural calculations indicating loads, stresses and deflections for members and connections.

1.06 QUALITY CONTROL

A. Testing Agency Services: Contractor may engage at his expense, a separate testing agency for information and guidance, to ascertain that all new materials are furnished, fabricated, installed, or erected in accordance with all requirements of the Contract Documents.

B. Inspection Reports: Testing agency shall send periodic reports of the findings of all inspections to the Architect, Owner, and General Contractor.

C. Defective Materials: Promptly replace all defective materials and workmanship, to the satisfaction of the Architect, at no cost to the Owner.

1.07 DELIVERY AND STORAGE

A. Packaging Waste Management: Separate packaging waste materials for reuse, recycling and/or landfill.

B. Delivery: Deliver to the site, all materials in protective wrappings, clearly labeled with all pertinent information to facilitate checking. Unload in areas designated by the General Contractor.

C. Storage: Store materials at the site off the ground and in properly protected dry storage facilities, until ready for use.

1.08 DAMAGE TO MATERIALS

A. Use care in storing, handling and erecting all material, and support material properly at all times to insure that no piece is bent, twisted or otherwise damaged. Material damaged due to carelessness shall be corrected at Contractor’s expense, to the approval of the General Contractor, before being erected.

1.09 SCAFFOLDING

A. Furnish, erect, and maintain all scaffolding and ladders in accordance with the standards of all governing local, state, and national safety codes. Equipment shall be erected at times and locations so as not to delay any part of Work. When no longer required, promptly dismantle equipment and remove from the site.

1.10 WARRANTY

A. Form of Warranty: Execute a warranty in the approved written form, warranting all materials and workmanship to remain in serviceable and satisfactory condition, and to make good at own expense any imperfections which may develop during the warranty period and any damage to other Work caused by imperfections or by repairing imperfections. The warranty period shall be not less than one (1) year from date of Owner's acceptance of the installation.

PART 2 - PRODUCTS

2.01 A. Substitutions: Manufacturers with comparable equivalent products may be acceptable, subject to conformance with these Specifications, the requirements of the Drawings, and the Architect's review. Refer to Specification 01 25 00 – Substitution Procedures.

2.02 DESIGN

A. Cold-formed metal framing systems shall be designed by a Professional Structural Engineer registered in the State of the proposed Project. Drawings for the design of the cold-formed metal framing systems and metal truss framing systems shall also be sealed by the same Engineer.

B. Design, analysis and computation of section properties shall be in accordance with the American Iron and Steel Institute (AISI) - North American Cold-Formed Steel Specification 2001 Edition with 2004 Supplement.

C. Technical tabulations of section properties and load capacities shall indicate dimensions, steel characteristics and allowable stresses upon which computations are based.

D. Framing systems shall be designed for applicable wind loads, with consideration for additional loading at eaves, corners, and overhangs.

E. Design Parameters: Refer to the Structural Drawings.

2.03 MATERIALS

A. Manufacturers:

1. Clark Western Building Systems, 101 Clark Boulevard, Middletown, OH 45044, (800)543-7140 or (513)539-2900; www.clarkwestern.com.

2. Dietrich Metal Framing, 500 Grant Street, Suite 2226, Pittsburgh, PA 15219, (412)281-2805; www.dietrichmetalframing.com.

3. Marino/Ware, 400 Metuchen Road, South Plainfield, NJ 07080, (908)757-9000 or (800)627-4661; www.marinoware.com.

B. Recycled Content of Steel Products: Provide products with an recycled content of steel so postconsumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.

C. Framing Systems: Framing system shall include, but not necessarily be limited to “C” type studs and/or SJ type studs with minimum 1-5/8" flange width and 1/2" stiffening ribs, of sizes and lengths noted on Drawings, with mating runner track and required erection accessories such as strapping, and clip angles, of galvanized steel. Unless stud members of greater strength are noted on Drawings, stud members shall be of such design as to be capable of resisting wind loading designed per Building Code required in the State of the proposed Project, and in accordance with the current AISI recommendations, with a maximum allowable deflection of L/600 and a minimum of 12.5 mm (0.5 in.) deflection in either vertical direction up or down.

D. Galvanized Studs:

1. Form all 12, 14, and 16 gauge galvanized structural members from steel corresponding to the requirements of ASTM Standard A653, SQ Grade 50 (minimum yield strength 50 KSI).

2. Form all l8 and 20 gauge galvanized structural members and accessories from steel corresponding to the requirements of ASTM Standard A653, SQ Grade 33 (minimum yield strength 33 KSI).

E. Galvanizing: All studs and accessories shall be formed from steel with a G-60 Hot-Dipped galvanized coating conforming to ASTM Standards A653 and C955.

F. Fastening Devices: Materials shall include electro-galvanized self drilling, self tapping, sheet metal screws of size required by calculations, plated expansion anchors to structural substrate, of size required by calculations. Use only drilled in anchors at connections to concrete and/or masonry.

G. Physical and Structural Properties: The physical and structural properties listed by Dietrich Metal Framing, shall be considered the minimum permitted for all framing members.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Refer to Section 01 31 00 – Project Management & Coordination

B. Refer to Section 01 73 00 - Execution

3.02 SHOP AND FIELD INSPECTION

A. Testing Agency Services: The Owner will secure the services of an unbiased, qualified, and recognized commercial Testing Laboratory, to inspect all Cold-Formed Metal Framing Work at the shop and in the field, and will pay all costs involved, except inspection costs due to reinspection of items found defective on the initial Owner sponsored inspection. Reinspection costs shall be born by the Contractor.

B. Shop Inspection shall include examination of the following Work:

1. Verify that only new materials are provided.

2. Conformance of Work with Specifications, including specified tolerances.

C. Field Inspection shall include examination of the following Work:

1. All members before erection to verify they have not been damaged in shipment, and are being properly stored on the site.
2. All members after erection to verify proper position.
3. All welds to verify proper execution, cleanliness, type, size, and strength.

D. Reports of Inspection: The Testing Laboratory shall send periodic reports of the findings of all inspections to the Architect, Owner’s Representative, and General Contractor within seven (7) days of inspection.

E. Cooperation: Contractor shall cooperate fully with the Testing Laboratory in the execution of the Testing Work.

3.03 INSPECTION

A. Examine conditions under which the Work is to be performed and notify the General Contractor in writing of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3.04 FABRICATION AND ERECTION

A. Fabricate and erect cold-formed metal framing at exterior walls and where shown on Drawings. All Work shall be in accordance with Drawings, approved Shop Drawings, manufacturer’s recommendations, and as specified herein.

B. Cut all framing components squarely, or at angle as in bracing, to fit squarely against abutting members. Firmly hold members in position until properly fastened.

C. Anchor track securely to bottom and to overhead steel framing structures as indicated on Drawings. Use butt welds or splices at all butt joints in the track.

D. Install studs at spacings indicated on Drawings. Where stud spacings are not indicated, space in accordance with manufacturer's recommendations to sustain without axial load, the design wind load and maximum deflection as specified herein or shown on the Design Drawings.

1. Seat studs squarely in the track, with the stud web and flanges abutting the track web, plumb and aligned, and securely attach to the flanges or web of both the upper and lower tracks, both sides.

2. Splices in studs will NOT be permitted.

3. Corners of stud walls shall be provided with three (3) studs minimum, located so as to provide surfaces for attachment of all interior and exterior facings.

E. Bridging shall be furnished and installed in wall systems as indicated on Drawings, and to manufacturer's specifications or recommendations.

F. Where non-structural sheathing is specified or indicated on Drawings, furnish and install lateral bracing in framing systems to manufacturer's specifications or recommendations. Where structural sheathing, such as plywood, is specified on Drawings, omit lateral bracing, except for erection purposes and stability before attachment of sheathing.

G. All accessories shall be furnished and installed as required for a complete and proper installation, in strict accordance with manufacturer's recommendations.

H. Fasten framing components with self-drilling, self-tapping screws, or by welding. Screws or welds shall be of sufficient size to insure the strength of the connection. Welds shall be fusion welds, including fillet welds, butt welds, plug welds and arc-spot welds (puddle welds), and shall be in accordance with the latest recommended procedures and practices of the American Welding Society (AWS).

I. Touch-Up Field Painting: Touch-up all damaged areas of galvanized coating, including field abrasions and welds, with zinc-rich galvanized coating repair paint according to ASTM A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings. Provide nylon/polyester or natural bristle brush application of paint product in accordance with the manufacturer's recommendations and instructions. Surfaces shall be dry, free from oil, dirt, dust, mill scale or other contaminants to ensure adequate adhesion.

1. Galvanized Coating Repair Paint: Zinc Clad® VI Water Based Organic Zinc-Rich Epoxy (VOC content of less than 105 grams/liter), as manufactured by The Sherwin-Williams® Company, Cleveland, OH, (800)321-8194; www.sherwin-williams.com
2. Volatile Organic Compounds (VOC) Content: Touch-up primer product specified herein shall have a VOC content of 250 grams/liter or less when calculated according to 40 CFR 59, subpart D (EPA method 24).

J. Isolation Coating: Wherever studs, or plates of cold-formed metal framing are to be secured to or be in contact with masonry or concrete, paint the metal contact surface with one (1) heavy coat of The Sherwin-Williams® Company “DTM Acrylic Primer/Finish, B66W1”, or comparable equivalent product subject to review by the Architect. Allow all paint to dry thoroughly prior to installation of Metal Framing Work. Exposed to view surfaces shall be clean and free of isolation coating.

1. Volatile Organic Compounds (VOC) Content: Touch-up primer product specified herein shall have a VOC content of 250 grams/liter or less when calculated according to 40 CFR 59, subpart D (EPA method 24).

3.05 FIRE PREVENTION

A. Precautions: When welding and/or cutting with burning torches is required, take all precautions to prevent damage to building(s) from fire, weld spatter, dripping molten metal, smoke and fumes, or other causes arising from the operations. Provide fireproof tarpaulins or enclosures around the areas of welding or burning.

B. Equipment: Furnish adequate and sufficient fire-fighting equipment and extinguishers to prevent damage and fire at each location where welding or burning is to be done.

3.06 DAMAGE TO ADJACENT CONSTRUCTION

A. Contractor shall be responsible for any damage to adjacent construction in place, caused by the Work of this section. Repair all damage at own expense, to the satisfaction of the Architect.

3.07 CLEAN-UP

A. Work Required: Clean-up any Work soiled in the performance of the Work of this Trade.

B. Debris and Waste Materials: During progress of Work, upon completion of Work, and before final acceptance of Work, keep the premises free of debris and waste materials resulting from Framing Work. Remove debris and rubbish to area designated by General Contractor, for general clean-up by General Contractor, or if directed by General Contractor to remove from the site and legally dispose.

C. Unused Materials, Tools, and Equipment: Upon completion of Work and before final acceptance of the Work, remove unused materials, tools, and equipment from the site.

D. Waste Management: Collect field generated construction waste created during construction or final cleaning.

END OF SECTION

SECTION 05 50 00
MISCELLANEOUS METAL WORK

The requirements of the “General Conditions”, the “Supplementary Conditions”, and “Division 1” sections of the Specifications, shall apply to this section of the Specifications.

PART 1 - GENERAL

1.01 SCOPE

A. Work Included: Furnish all labor, materials, equipment, apparatus, tools, transportation, protection, and services necessary for Miscellaneous Metal Work indicated on the Drawings and specified herein.

B. Examination: Carefully examine the Drawings and Specifications and include all Miscellaneous Metal Work not distinctly specified in other sections, or noted on the Drawings as being provided by other Trades.

C. Miscellaneous Metal Products: No attempt is made to enumerate or describe each item of the Work, but simply to describe major items, certain special items, and general construction requirements for all items. Work includes, but is not necessarily limited to the following:

1. Anchors.

2. Anchor Bolts and Pipe Sleeves.

3. Lintels.

4. Miscellaneous Steel Frames and Curbs.

5. Steel Ladders - furnish and install.

D. Related Sections: The following items of related Work will be provided under other sections of the Specifications:

1. Indoor Air Quality Requirements - Section 01 81 19. AIR BORNE PRODUCTS

3. Concrete Reinforcing - Sections 03 00 50 and 03 30 00.

4. Masonry Reinforcing - Section 04 23 00.

5. Structural Steel (including Roof Opening Curb Steel) - Section 05 12 00.

6. Cold-Formed Metal Framing - Section 05 40 00.

8. Rough Carpentry - Section 06 10 00.

9. Roof and Wall Specialties and Accessories - Section 07 70 00.

10. Hollow Metal Doors and Frames - Section 08 11 13.

11. Door Hardware - Section 08 71 00.

12. Gypsum Wallboard - Section 09 29 00.

13. Acoustical Panel Ceilings - Section 09 51 13.

14. Paints and Coatings - Section 09 90 00.

E. Work Furnished but not installed:

1. Items anchored (not bolted) to Concrete and Masonry Work.

2. Items as specified herein for installation by others.

1.02 DESIGN REQUIREMENTS

A. Structural Performance of Handrails and Railing Systems: Design, engineer, fabricate, and install handrails and railing systems to comply with requirements for ASTM Standard E985 for structural performance, based on testing performed in accordance with ASTM Standards E894 and E935.

B. Accessibility Guidelines: Handrails required to be accessible to persons with disabilities shall comply with Title III of The Americans with Disabilities Act (ADA), Public Law 101-336.

1.03 QUALITY ASSURANCE

A. Reference Specifications: Except as otherwise specified herein, materials and workmanship shall conform to the following current specifications as amended to date.

1. All applicable Local Building Codes and Ordinances.

2. “Specifications for Structural Steel Buildings”, and “Commentary” thereon, as adopted by the American Institute of Steel Construction, Inc. (AISC), March 9, 2005.

3. American Welding Society (AWS), D1.1, Structural Welding Code - Steel.

4. "Standard Specifications for Open Web Steel Joists" as adopted by the Steel Joist Institute (SJI) and the American Institute of Steel Construction, Inc., (AISC).

1.04 CERTIFICATION OF WELDERS

A. Current and valid certification qualified by a recognized, Independent Laboratory shall be furnished to Architect for all welders working on fabrication and/or erection PRIOR to starting Work. All welding shall be performed by welders who have qualified by tests in accordance with AWS "Standard Qualification Procedure", to perform the type of Work required.

1.05 SUBMITTALS

A. General: Submit Shop Drawings and Product Data to the Architect for review in accordance with the requirements in Section 01 33 23 - Shop Drawings and Samples, and as specified herein.

B. Reports: Submit test reports, procedure specifications and certifications as required to substantiate welded connections design and welding qualifications to the Owner's Representative and the General Contractor for review.

C. Shop Drawings:

1. Prepare completely detailed Shop Drawings showing all items to be provided, and submit reproducibles to the Architect for review.

2. Prepare completely detailed Shop Drawings showing details for cutting, fabricating, and connecting all pieces. Do not duplicate Design Drawings for use as Shop Drawings. Duplication of Design Drawings shall be grounds for rejection.

3. Where connections are not shown on the Drawings, connections shall be designed and detailed on the Shop Drawings, and sealed by a Registered Professional Structural Engineer in the State of the proposed Project, retained and paid by the steel fabricator.

4. Provide separate Shop Drawings for erection.

5. Prepare Shop Drawings in accordance with "AISC - Detailing for Structural Steel", latest edition, using a marking system compatible with, and referenced to, the marking system used on the Design Drawings.

6. Indicate welding by using AWS symbols, showing type, size and location of all welds. Provide auxiliary views of welds as required to clarify the welded connections.

7. Formally check all Shop Drawings before forwarding to Architect.

C. Reports: Submit test reports, procedure specifications and certifications as required to substantiate welded connections design and welding qualifications to the Owner's Representative and the General Contractor for review.

1.06 QUALITY CONTROL

A. Testing Agency Services: Contractor may engage at his expense, a separate testing agency for information and guidance, to ascertain that all new materials are furnished, fabricated and installed in accordance with all requirements of the Contract Documents. The testing agency shall send reports of all inspections to the Architect, Owner, and General Contractor.

1.07 WARRANTY

A. Form of Warranty: Execute a warranty in the approved written form, warranting all materials and workmanship to remain in serviceable and satisfactory condition, and to make good at own expense any imperfections which may develop during the warranty period, and damage to other Work caused by imperfections or by repairing imperfections. The warranty period shall be not less than one (1) year from date of Owner's acceptance of the installation.

1.08 MATERIAL DELIVERY, STORAGE & HANDLING

A. Packaging Waste Management: Separate packaging waste materials for reuse, recycling and/or landfill.

PART 2 - PRODUCTS

2.01 Substitution

A. Manufacturers with comparable equivalent products may be acceptable, subject to conformance with these Specifications, the requirements of the Drawings, and the Architect's review. Refer to Specification 01 25 00 – Substitution Procedures.

2.02 MATERIALS

A. Recycled Content of Steel Products: Provide products with an recycled content of steel so postconsumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.

B. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so post-consumer recycled content plus one-half of pre-consumer recycled content is not less than the following:

1. W-Shapes: 60 percent.

2. Channels, Angles, M, S -Shapes: 60 percent.

3. Plate and Bar: 25 percent.

4. Cold-Formed Hollow Structural Sections: 25 percent.

5. Steel Pipe: 25 percent.

6. All Other Steel Materials: 25 percent.

C. Steel Rolled Plates and Shapes: Fabricated from new open hearth structural steel conforming to ASTM A36 - Standard Specification for Carbon Structural Steel.

D. Steel Pipe: ASTM Standard A53, Type S, Grade A, Schedule 40, unless otherwise noted.

E. Steel Tubing: Cold rolled, electric resistance welded, carbon steel, hollow, structural steel tubing, fabricated from steel having properties complying with ASTM A500 - Standard Specification for Cold- Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

F. Hi-Tensile Bolts: Heavy hex type structural bolts conforming with ASTM Standard A325, with matching heavy hex type nuts, 3/4" minimum diameter, of lengths required for connections, with hardened steel washers.

G. Standard Bolts and Anchor Bolts: Unfinished bolts conforming to ASTM Standard A307, Grade A, with hexagon heads and nuts where exposed in the finish Work.

H. Expansion Bolts: Hilti® Kwik Bolt 3 Expansion Anchor as manufactured by Hilti, Inc., 5400 South 122nd. East Avenue, Tulsa, OK 74146, (866)445-8827, (800)879-8000 or (918)252-6000; www.us.hilti.com.

1. Comparable Products: Expansion bolts by the following manufacturer with comparable products of equivalent capacity may be acceptable, subject to conformance with these Specifications, the requirements of the Drawings, and the Architect's review.

a. Power-StudÔ as manufactured by Powers Fasteners, Inc., 2 Powers Lane, Brewster, NY 10509, (800)524-3244 or (914)235-6300; www.powers.com.

I. Welding Electrodes: Series E-60 or E-70, AWS A5.1 or A5.5.

J. Galvanizing: Provide zinc coating where indicated on the Drawings. Galvanizing shall be in accordance with ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products and/or ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware, not less than 1.25 oz./sq.ft.

K. Priming Paints: Provide one (1) of the following manufacturers and products, “lead and zinc chromate free” rust inhibiting priming paint, subject to review by the Architect. Substitutions will not be permitted.

1. Manufacturers:

a. ICI Paints, Devoe® High Performance Coatings, Strongsville, OH, (800)654-2616; www.devoecoatings.com.

b. PPG Architectural Finishes, 400 S. 13th Street, Louisville, KY 40203, (800)441-9695; www.ppghpc.com.

c. Tnemec, Inc., 6800 Corporate Drive, Kansas City, MO 64120, (800)863-6321; www.tnemec.com.

2. Ferrous Metal Paint Product:

a. ICI Paints, Devoe® High Performance Coatings, DEVSHIELD™ 4130 Rust Penetrating Metal Primer, Light Gray.

b. PPG Architectural Finishes, PPG High Performance Coatings™ (HPC), SPEEDHIDE® Int/Ext Rust Inhibitive Steel Primer 6-208 Red.

c. Tnemec, Inc., Tnemec Primer Series 10, 99 Red.

3. Galvanized Steel Paint Product:

a. ICI Paints, Devoe® High Performance Coatings, DEVGUARD™ 4160 Multi-Purpose Tank & Structural Primer, White.

b. PPG Architectural Finishes, PPG High Performance Coatings™ (HPC), SPEEDHIDE® Int/Ext Galvanized Steel Primer 6-209, White.

c. Tnemec, Inc., Hi-Build Epoxoline Series 66, White.

2.02 CONNECTIONS AND WORKMANSHIP

A. General: Weld all shop connections, bolt or weld all field connections unless otherwise noted or specified. Provide all clips, lugs, brackets, straps, plates, bolts, nuts, washers, required for complete fabrication and erection. Use connections of type and design required by forces to be resisted, and to provide secure fastening. Shop welded steel bolts shall be welded to sides and bottom of steel members, not at top of member.

B. Bolting: In bolting, draw-up bolts or nuts tight, and deform threads where possible. Use bolts of lengths required so that bolts do not project more than 1/4" beyond face of nut. Do not use washers unless specified.

C. Welding:

1. Perform all welding by the electric arc method, in accordance with the recommendations of the American Welding Society (AWS). Welds shall be solid and homogeneously a part of the metals joined, free from pits or incorporated slag or scale. Surfaces of weld shall be smooth and regular, and shall be of full area indicated or required to develop the required strength of the joint.

2. Only welders and welding operators who have been tested and certified in accordance with Appendix A, AWS D1.0, and the applicable provisions of AWS D1.0 will be permitted. All operators shall pass all applicable qualification tests while in the current and continuous employment of the fabricator or erector regardless of previous qualifications and certifications.

3. Perform all shop and field welding by the shielded metal-electric arc process. Use qualified welders. Provide all necessary jigs and holding devices for shop welding. Dog or clamp down all Work to prevent distortion during welding.

4. Design weld details and procedures so as much shop Work as possible is performed in the flat and horizontal position. Avoid undercutting, insufficient throat or leg, lack of fusion and splattering. Prepare welding procedure specifications and diagrams for each weld joint, and use in the Work. Assign each joint a procedure designation number or code. Show the number or code in the tail or each welding symbol in the Shop Drawings. Qualify non-prequalified welds in accordance with Appendix A, AWS D1.0. Where a standard weld type is repeated throughout the Work, the procedure designation or code may be indicated by general note or reference on each Shop Drawing where that weld type appears.

5. Make fillet welds larger than 5/16" in not less than two (2) passes. After each pass, remove the slag coating entirely before starting next pass. Do not use fillet welds smaller than 1/4" unless the thickness of the connected material requires the use of 3/16" weld. Add approximately 3/4" to the theoretical length of all intermittent welds as an allowance for craters. Fill all craters.

6. Structural welds shall not be less than 3" in length unless otherwise approved on Shop Drawings.

7. Welds of all metal fabrications exposed in the finish Work shall be ground smooth, flush with adjacent surfaces, filleted at angular connections, and suitably prepared for final finish painting, unless otherwise specified.

D. Galvanized Steel Products: Field touch-up all damaged areas of galvanized coating, damaged during erection including field abrasions and welds, with zinc-rich galvanized coating repair paint according to ASTM A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings. Provide nylon/polyester or natural bristle brush application of paint product in accordance with the manufacturer's recommendations and instructions. Surfaces shall be dry, free from oil, dirt, dust, mill scale or other contaminants to ensure adequate adhesion.

1. Galvanized Coating Repair Paint: Zinc Clad® VI Water Based Organic Zinc-Rich Epoxy (VOC content of less than 105 grams/liter), as manufactured by The Sherwin-Williams® Company, Cleveland, OH, (800)321-8194; www.sherwin-williams.com

2. Volatile Organic Compounds (VOC) Content: Galvanized coating repair paint product specified herein shall have a VOC content of 250 grams/liter or less when calculated according to 40 CFR 59, subpart D (EPA method 24).

E. Holes for Connections of Work by Others: Provide all holes required for the connection of the Work of other Trades where noted on the Drawings, or determined prior to fabrication of the steel.

F. Finished Work: Any Work not presenting a finished appearance will be rejected. Furnish all members true to length so assembling may be done without fillers, except where required as detailed. Trim projecting edges or corners flush where different members are assembled. All items shall be free from twists, bends, and joints. Cope, block, and miter joints carefully and neatly. Clip projecting corners. Trim all filler pieces flush.

2.03 PAINTING (SHOP AND FIELD)

A. Miscellaneous (steel) metal shall be shop prime painted and field touched-up using paint specified herein.

B. Before shop painting, thoroughly clean all surfaces of all dirt, grease, scale and rust. All surfaces not in contact but inaccessible after assembling shall have two (2) coats before assembling. Surfaces in contact after assembling need have no paint. All finished pieces shall have one (1) coat before leaving the shop.

C. After erection, clean all foreign material off the steel, and if paint is removed, repaint to meet requirements of original prime coatings.

D. After all miscellaneous (steel) metal Work has been installed and accepted, touch-up all abraded surfaces, including field bolts and welded areas.

1. Volatile Organic Compounds (VOC) Content: Field touch-up paint product specified herein shall have a VOC content of 250 grams/liter or less when calculated according to 40 CFR 59, subpart D (EPA method 24).

E. Furnish the General Contractor with copies of invoice for paint, and allow manufacturer's representatives and General Contractor full access to the paint shop to inspect the paint.

2.04 ANCHORS

A. Provide anchors for miscellaneous iron members anchored into concrete or masonry. Fabricate anchors from strap iron, bent to shape, welded to backs of members, extended with bent end for building-in as conditions require, of sizes and spacing as noted. Where size and spacing are not noted, furnish 1-1/2" x 1/4" size anchors for concrete and 1-1/2" x 1/8" size anchors for masonry. Space masonry anchors properly to fit the pointing of the adjacent masonry Work. Unless otherwise noted on the Drawings, space anchors 3'-0" or less on centers.

B. Where anchors and plates or clips are to be built-in for attachment of later Work, provide bolts in the plates or clips, welded to back, with threaded ends extended as required.

C. For attaching Work to masonry or concrete, where anchors or inserts cannot be built-in, provide approved type of cinch anchors and machine bolts or screws.

2.05 ANCHOR BOLTS AND PIPE SLEEVES

A. Furnish to Masonry Contractor for installation, miscellaneous anchor bolts and pipe sleeves as indicated and required, including all markings, setting diagrams, templates. Steel Contractor shall drill all holes required for anchor bolts and through-bolts detailed not to be built-in.

B. Furnish to Concrete Contractor for installation, pipe sleeves as indicated and required, including all markings, setting diagrams, and templates.

2.06 LINTELS

A. Furnish to the Masonry Contractor for setting, all steel lintels for masonry veneers, including those required for items such as grilles, doors, ducts, wall recesses and other locations shown or required.

B. Lintels shall be rolled structural shapes of sizes noted, selected for straightness and trueness of section. Camber shall not exceedM1/8" in 10'-0".

C. Unless otherwise shown, lintels shall have a bearing of not less than 8" each side of opening.

D. Galvanize all lintels in exterior walls.

2.07 MISCELLANEOUS STEEL FRAMES AND CURBS

A. General: Furnish steel frames and curbs in accordance with the Drawings and as specified herein, to Masonry or Concrete Contractor for setting.

B. Fabrication: Steel frames for door and other miscellaneous openings, and steel curbs throughout shall be built-up of rolled steel plate or structural sections as noted, with connections to adjoining Work, and anchors for building into masonry and/or concrete. All sections shall be selected for trueness of web and flange, straightened as required so that the finished frames are uniform, square and true throughout the length and depth of the assembled units and that curbs are straight and true.

C. Assembly: Frames shall be assembled by riveting or welding, but rivets may not be used on exposed surfaces. Built-up members of frames shall be connected by means of plug welding or continuous welding. Exposed edges of member shall be welded continuously. Frames and lintel members shall be welded together where so noted and shown. All exposed welding shall be ground smooth.

D. Door Frame Jambs in Concrete or Masonry: Provide 1-1/4" x 3/16" steel strap anchors on back, vertically adjusted, 2'-0" on centers maximum for building into concrete or masonry, and clip angle at bottom for bolting into concrete; and shall be fitted with temporary spreader bars at bottom to hold frame in shape during shipping and erection.

E. Steel Frames and Curbs in Concrete Work: Provide 1-1/2" x 1/4" steel strap anchors on back, extended for building-in, spaced not over 3 ft. on centers, but not less than two (2) per side.

2.09 MISCELLANEOUS

A. Anchoring Cements: Products specified herein shall be as manufactured by CGM, Incorporated, 1445 Ford Road, Bensalem, PA 19020, (800)523-6570, (215)638-4400; www.cgmbuildingproducts.com, or comparable equivalent products subject to review by the Architect.

1. Exterior Use - Anchoring Cement: Super Por-Rok® Exterior Anchoring Cement, quality controlled hydraulic cement, quick-setting, pourable, non-metallic, non-shrink grout, in accordance with the following ASTM International Standard Specifications.

a. ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens).

b. ASTM C900 - Standard Test Method for Pullout Strength of Hardened Concrete.

2. Interior Use - Anchoring Cement: Por-Rok® Anchoring Cement, non-shrink, hydraulic controlled expansion cement.

3. Material Shelf Life: Do not retain material at the jobsite which has exceeded the shelf life recommended by the manufacturer.

B. Isolation Coatings: Paint products specified herein shall be as manufactured by The Sherwin Williams® Company, Cleveland, OH, (800)321-8194, (800)474-3794, or comparable manufacturer's equivalent products subject to review by the Architect.

1. Aluminum Contact with Steel: Wherever aluminum items are to be secured to, or in contact with steel supporting members, paint the contact surface of the steel with the following paint system for both the surfaces of the steel supporting members and the aluminum.

   a. One (1) Prime Coat: Kem Kromik® Universal Metal Primer, B50WZ1 Off-White (VOC content of less than 420 grams/liter).

      1) Volatile Organic Compounds (VOC) Content: Galvanized coating repair paint product specified herein shall have a VOC content of 250 grams/liter or less when calculated according to 40 CFR 59, subpart D (EPA method 24).

   b. One (1) Topcoat: TarGuard® Coal Tar Epoxy, B69B60 Black (VOC content of less than 250 grams/liter).

      1) Volatile Organic Compounds (VOC) Content: Galvanized coating repair paint product specified herein shall have a VOC content of 250 grams/liter or less when calculated according to 40 CFR 59, subpart D (EPA method 24).

2. Aluminum Contact with Masonry or Concrete: Wherever aluminum items are to be secured to or in contact with masonry or concrete, shop paint the aluminum contact surface with the following paint product.

   a. One (1) Topcoat: TarGuard® Coal Tar Epoxy, B69B60 Black (VOC content of less than 250 grams/liter).

      1) Volatile Organic Compounds (VOC) Content: Galvanized coating repair paint product specified herein shall have a VOC content of 250 grams/liter or less when calculated according to 40 CFR 59, subpart D (EPA method 24).

3. Brass or Bronze Contact With Steel: Wherever brass or bronze items are to be in contact with steel members, paint the contact surfaces of the steel with one (1) coat of TarGuard® Coal Tar Epoxy, B69B60 Black, (VOC content of less than 250 grams/liter).

a. Volatile Organic Compounds (VOC) Content: Galvanized coating repair paint product specified herein shall have a VOC content of 250 grams/liter or less when calculated according to 40 CFR 59, subpart D (EPA method 24).

4. Condition of Painted Products: Paint coats shall be thoroughly dry prior to installation of the steel, aluminum, brass and/or bronze products. Exposed to view surfaces shall be clean and free of isolation coatings.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Refer to Section 01 31 00 – Project Management & Coordination

B. Refer to Section 01 73 00 - Execution

3.02 SETTING AND ERECTING MISCELLANEOUS METAL

A. Fabricate all items as required to be built into concrete or masonry completely, and deliver to site for installation by others. Furnish all parts complete with bolts, anchors, clips, ready to set. Deliver items to the general location of the Work. Where Work is composed of several parts, only those parts upon which anchors occur, will be set and built-in by the other Trades, ready to receive further field assembly by this Trade.

1. All Work required to be anchored entirely in concrete shall be set by the Concrete Contractor.

2. All Work required to be anchored entirely to masonry shall be set by the Mason Contractor.

3. All Work required to be anchored partially to masonry shall be set by the Mason Contractor.

B. Where necessary to secure Work to the structure by means of expansion bolts, cinch anchors, and similar connections, lay-out and install connections, install the Work and bolt up. Drill holes in Concrete and Masonry Work with rotary twist drills only.

C. Furnish, connect, and completely install all other items. Erect all items to proper lines and levels, plumb and true, and in correct relation to adjoining Work. Secure all parts in a rigid and substantial manner using concealed connections whenever practicable.

3.03 FIRE PREVENTION

A. Precautions: When welding or cutting with burning torches is required, take all precautions to prevent damage to the building(s) from fire, weld spatter, dripping molten metal, smoke and fumes, or other causes arising from the operations. Provide fireproof tarpaulins or enclosures around the areas of welding or burning.

B. Trained Personnel and Equipment: Furnish a worker trained and experienced in fire-fighting, whose sole duty shall be to prevent damage and fire at each location where welding or burning is to be done. Furnish adequate and sufficient fire-fighting equipment and extinguishers at each location.

3.04 FIELD FINISH PAINTING

A. Finish field painting of miscellaneous metal items as indicated on the Drawings and specified herein shall be by the Painting Contractor.

3.05 CLEAN-UP

A. Waste Management: Collect field generated construction waste created during construction or final cleaning.

END OF SECTION

SECTION 06 10 00
ROUGH CARPENTRY

The requirements of the “General Conditions”, the “Supplementary Conditions”, and “Division 1” sections of the Specifications, shall apply to this section of the Specifications.

PART 1 - GENERAL

1.01 SCOPE

A. Work Included: Furnish all labor, materials, equipment, and services necessary for Rough Carpentry Work indicated on the Drawings and specified herein. Work includes, but is not necessarily limited to the following:

1. Wood Nailers, Blocking, and Plywood - furnish and install.

2. Rough Hardware - furnish and install.

B. Related Sections: The following items of related Work will be performed under other sections of the Specifications:

1. Indoor Air Quality Requirements - Section 01 81 19. AIR BORNE PRODUCTS

2. Concrete Formwork and Cast-In-Place Concrete- Sections 03 10 0 and 03 30 00.

3. Unit Structural Masonry - Section 04 23 0.

4. Structural Steel - Section 05 12 00.

5. Metal Roof Deck - Section 05 31 0.

6. Cold-Formed Metal Framing - Section 05 40 00.

7. Board Insulation - Section 07 21 2.

8. Sheet Metal Work - Section 07 60 00.

9. Aluminum Framed Entrances and Storefronts- Section 08 41 13.

10. Gypsum Wallboard - Section 09 29 00.

11. Thin-Set Tile Work - Section 09 31 00.

12. Resilient Tile Flooring - Section 09 65 19

13. Paints and Coatings - Sections 09 90 00.

14. Toilet Compartments - Section 10 21 13.

15. Plumbing Fixtures - Division 22.

1.02 QUALITY ASSURANCE

A. Wood Treatment Plants: The treatment plant shall be franchised or licensed by the specified preservative and/or retardant manufacturers as specified herein.

B. Requirements of Regulatory Agencies:

1. Grades of Lumber and Plywood: Lumber and plywood shall be as defined by the rules of the recognized association of manufacturers producing the kind or species of lumber and plywood specified herein. All lumber and plywood shall be grade stamped by the inspecting authorities.

C. Environmental Requirements: Paint products shall comply with all applicable Federal and State Regulations on Volatile Organic Compounds (VOC).

D. Environmental Requirements: Paint products such as touch-up field painting and isolation coatings shall comply with all applicable Federal and State Regulations on Volatile Organic Compounds (VOC). PAINT

1.03 MEASUREMENTS

A. Field Measurements: Contractor shall obtain field measurements of adjoining Work as required to locate and fit the Work of this section. Contractor shall be responsible for the accurate fitting of materials together and to the building.

1.04 SUBMITTALS

A. General: Submit Shop Drawings, Product Data, and Samples to the Architect for review in accordance with the requirements in Section 01 33 23 - Shop Drawings and Samples, and as specified herein.

B. Reports: Submit test reports, procedure specifications and certifications as required to substantiate welded connections design and welding qualifications to the Owner’s Representative and the General Contractor for review.

C. Shop Drawings: Prepare complete Shop Drawings, showing dimensions, sections, details of materials, fabrication, and installation of materials and products. Special attention shall be given to, but not necessarily limited to the following:

D. Product Data: Include the following for review.

1. Wood Treatment Certificates for Lumber and Plywood.

2. Products specified herein under Article heading MISCELLANEOUS".

1.05 PRODUCT DELIVERY, HANDLING AND STORAGE

A. Protection: Protect all materials from the weather during transit and during storage at the site. Store materials above the ground, in sheds if possible. If outdoor storage is required, house materials under waterproof coverings. Do not deliver materials to the job site until required for installation. Take all precautions to avoid absorption of moisture by wood and plywood.

1.06 WARRANTY

A. Form of Warranty: Execute a warranty in the approved written form, warranting all materials and workmanship to remain in serviceable and satisfactory condition, and to make good at own expense any imperfections which may develop during the warranty period and damage to other Work caused by imperfections or by repairing imperfections. The warranty period shall be not less than one (1) year from date of Owner's acceptance of the installation.

PART 2 - PRODUCTS

2.01 WOOD FOR ROUGH CARPENTRY

A. Substitutions: Manufacturers with comparable equivalent products may be acceptable, subject to conformance with these Specifications, the requirements of the Drawings, and the Architect's review. Refer to Specification 01 25 00 – Substitution Procedures.

B. Lumber: Wood shall conform to American Softwood Lumber Standard, current edition of "Voluntary Product Standard PS20", as published by the National Institute for Standards and Technology (NIST). Grades shall conform with current grading rules of the Lumber Manufacturers Association, under whose rules the lumber is manufactured.

C. Dimension and Board Lumber: Douglas Fir. All lumber shall be "seasoned dry" (S-DRY), 19% or less moisture content.

D. Lumber Grades:

1. Boards: Douglas Fir, S4S, Standard Grade or better.

E. Wood Treatments: All dimension lumber except wood blocking and nailers at roof, shall be fire retardant treated. Wood blocking and nailers at roof and in contact with masonry shall be preservative treated.

2.02 PLYWOOD

A. Standards, Thicknesses and Grades: Plywood shall be in accordance with the National Institute of Standards and Technology (NIST) current DOC VPS Standard PS 1-95, and the quality standards of the APA-The Engineered Wood Association (formerly American Plywood Association). Thicknesses shall be as indicated on the Drawings. Grades of plywood shall be as follows for various uses, as indicated by the registered grade-trademarks of APA:

1. Plywood Sheathing: C-D EXT-APA or APA Standard with exterior glue.

2. A-C Plywood: A-C EXT-APA.

3. A-D Plywood: A-D Exposure 1 (interior exposed, such as backboards for electrical and telephone panels).

4. B-C Plywood: B-C EXT-APA (water heater platforms).

5. C-D Plywood: C-D Plugged (interior concealed).

B. Engineered Wood Products: Products shall contain no urea formaldehyde.

C. Fire Retardant Treatment: All plywood and plywood sheathing shall receive “Fire Retardant Treatment” as specified herein.

2.03 WOOD TREATMENTS

A. Manufacturer: Wood treatments required and as specified herein shall be products Equal to: Arch Wood Protection, Inc., Arch Treatment Technologies, Inc., 5660 New Northside Drive, Suite 1100, Atlanta, GA 30328, (678)627-2000; www.archchemicals.com. Manufacturers with equivalent products and treatments shall be subject to review by the Architect.

B. Wood Preservative Treatment: All wood nailers at roof parapets, and/or in contact with masonry, and elsewhere as indicated on the Drawings, shall be pressure impregnated in accordance with the specifications for treatment by Arch Wood Protection, Inc., with Wolman® CCA (Chromated Copper Arsenate) wood preservative and shall bear the Wolmanized® trademark. Treated wood shall conform to AWPA Standard P5, and have a mark certifying conformance. The treating process shall meet requirements of Fed. Spec. TT-W-571 and AWPA Commodity Standards as applicable.

C. Fire Retardant Treatment: Fire retardant treat all wood lumber, plywood and plywood sheathing by pressure treating with Dricon® fire retardant chemicals, by Arch Wood Protection, Inc. Kiln dry all pieces after treatment. Identify all treated pieces with an Underwriters Laboratories, Inc., label or marking, prior to shipment to site. Treatment shall be in accordance with the impregnating salt manufacturer’s U.L. approved, specifications, and shall render the wood fire retardant to the extent that

the flame spread does not exceed 25 per ASTM Standard E84 modified to require a 30 minute test period. The treating process shall conform to the requirements of the applicable AWPA Standard C1, C2, C3, C4, C9, C14, C15, C16, C22, C23, C24, C28, C31, C33 and M4, for the species, product, preservative and end use. Preservatives shall conform to AWPA P1/P13, P2, P5, P8 and P9. Include certification by treatment plant that the treatment will not bleed through finished surfaces.

D. Certification: Submit certificates of wood treatments. Stamp or brand lumber before delivery, indicating treatment applied.

E. Exposed Wood/Field-Cuts: Surfaces of treated wood exposed by cutting or drilling at the job site shall be treated with heavy brush coat of same preservative or fire-retardant treatment used in treatment.

1. Volatile Organic Compounds (VOC) Content: Field applied preservative and fire-retardant product specified herein shall have a VOC content of 350 grams/liter or less when calculated according to 40 CFR 59, subpart D (EPA method 24).

2.04 ROUGH HARDWARE

A. General: Furnish all items of rough hardware such as spikes, nails, screws, bolts, anchors, brackets, etc., necessary for the installation of this Work.

1. Recycled Content of Steel Products: Provide products with a recycled content of steel so postconsumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.

B. Bolts, Nuts, and Expansion Shields: Use galvanized steel bolts for all bolting Work. Use carriage bolts and nuts, or welded stud bolts and nuts for securing wood members to steel framing. Use metallic expansion shields for securing bolts to concrete. Use similar shields or toggle bolts for securing to masonry. Select length of bolts to suit thickness of material being joined.

C. Nails: Use nails conforming with Federal Spec. FF-N-105a, except as otherwise specified. Use galvanized steel nails for all Work. Zinc coating on galvanized nails shall conform with Article 3.2.1 of the Fed. Spec. Do not use aluminum nails. Except as otherwise specified, use common nails for securing of rough carpentry, use casing or finish nails, counter-set, for securing of finish carpentry.

D. Corrosion Rates: Rough hardware in contact with fire retardant treated wood shall exhibit corrosion rates less than one mil per year when tested in accordance with Fed. Spec. MIL-L-19140E, Paragraph 4.6.5.2.

2.05 MISCELLANEOUS

A. Isolation Coatings: Paint product specified herein shall be as manufactured by The Sherwin Williams® Company, McAllen, TX, or comparable manufacturer's products subject to review by the Architect.

1. Paint Product: TarGuard™ Coal Tar Epoxy, B69B60 Black.

2. Condition of Painted Products: Paint coats shall be thoroughly dry prior to installation of the steel/metal products. Exposed to view surfaces shall be clean and free of isolation coatings.

3. Volatile Organic Compounds (VOC) Content: Field applied preservative and fire-retardant product specified herein shall have a VOC content of 250 grams/liter or less when calculated according to 40 CFR 59, subpart D (EPA method 24).

PART 3 - EXECUTION

3.01 EXAMINATION

A. Refer to Section 01 31 00 - Project Management & Coordination

B. Refer to Section 01 73 00 - Execution

3.02 ROUGH CARPENTRY

A. Wood Nailers, and Blocking:

1. Neatly and accurately fit together with all necessary bolts and spikes, all wood where indicated on Drawings, such as blocking, nailers, as required to make secure.

2. Where wood blocking is required in metal stud framed walls, e.g., for support of Tenant's or Owner's fixturing, securely fasten the wood blocking to the metal stud framing at positions required, as detailed and/or noted on the Drawings. Coordinate Work with Tenant's or Owner's Representative.

3. Where wood members are to be secured to masonry, secure with 1/2" bolts with 3" hooked ends, not less that two (2) to each block, continuous nailers shall be spaced approximately 32" O.C. Bore lumber for bolts and countersink for heads. Provide washers under all bolt heads and nuts. All nailers and cants shall be furnished in long lengths to minimize number of end joints. When joints are required, they shall be made without projecting edges.

4. Miscellaneous wood items which are built into concrete or masonry shall be delivered to the respective contractors for installation.

5. Metal roof deck flutes shall be provided with wood blocking where and as indicated on the Drawings.

B. Rough Hardware: Install all items of rough hardware as necessary for the execution of the Work.

C. Preservative Treated Wood: Install wood treated with approved preservative for wood nailers at roof parapets, and in contact with masonry. Surfaces of treated wood exposed by cutting or drilling at the job site shall be treated with heavy brush coat of same preservative as applied at the treatment plant.

D. Fire Retardant Treated Wood: Install wood that has been fire retardant treated, and in all wood blocking.

E. Plywood: Install plywood, including plywood sheathing, of thickness noted and where indicated on Drawings. All Work and nailing shall be in accordance with the recommendations of APA-The Engineered Wood Association, and with the governing code requirements.

3.03 CLEAN-UP

A. Work Required: Clean-up or repair adjacent finish Work which is soiled, marred, or damaged by the Work of this section, at Contractor's expense.

B. Debris and Waste Materials: During progress of the Work, the premises shall be kept free of all debris and waste materials resulting from the Work of this section. During progress of the Work, upon completion of Work, and before final acceptance of the Work, remove all debris and rubbish from the site and dispose of legally. Upon completion and before final acceptance of the Work, all debris, rubbish, unused materials, tools, and equipment shall be removed from the site.

END OF SECTION

SECTION 07 19 00
WATER REPELLENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes water repellent coating applied to exterior clay brick, and concrete surfaces.

B. Related Sections:
1. Section 04065 - Masonry Mortar and Grout.
2. Section 07900 - Joint Sealers.

1.2 REFERENCES

A. ASTM D1653 - Test Method for Water Vapor Transmission of Organic Coating Films.

1.3 SYSTEM DESCRIPTION

A. Applied Penetrant: Material to restrict moisture absorption in material being treated as recommended by manufacturer for specific substrate.

1.4 SUBMITTALS

A. Section 01330 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit details of product description, tests performed, limitations to coating, and chemical properties including percentage of solids.

C. Manufacturer's Installation Instructions: Submit special procedures and conditions requiring special attention, and cautionary procedures required during application.

D. Manufacturer's Certificate: Certify products meet or exceed pecified requirements.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Applicator: Company specializing in performing the Work of this section with minimum three years documented experience approved by manufacturer.

1.6 MOCK-UP

A. Section 01400 - Quality Requirements: Mock-up requirements.

B. Prepare one full panel surface in size.

C. Prepare one brick column base surface in size, in accordance with ASTM D5703.

D. Locate where directed.

E. Testing: Test mock-up with 5/8 inch garden hose with spray nozzle located approximately 10 feet from wall and aimed upward so water strikes at 45 degree downward angle.
   1. Do not begin testing until mock-up has fully cured, minimum 20 days unless longer period recommended by manufacturer.
   2. Run water continuously for minimum three hours and observe back side of mock-up for water penetration and leakage.
   3. If leakage is detected make changes as needed and retest; retest until no leakage is detected.

F. Mock-up may not remain as part of the Work.

1.7 PRE-INSTALLATION MEETING

A. Section 01300 - Administrative Requirement: Pre-installation meeting.

B. Convene minimum one week prior to commencing mock-up for this section.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 01600 - Product Requirements: Product storage and handling requirements.

B. Protect coating liquid from freezing.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Section 01600 - Product Requirements.

B. Do not apply coating when ambient temperature is lower than 50 degrees F or higher than 100 degrees F.

C. Do not apply coating when wind velocity exceeds manufacturer recommendations.

1.10 WARRANTY

A. Section 01700 - Execution Requirements: Product warranties and product bonds.

B. Provide five year manufacturer warranty for water repellents.

PART 2 PRODUCTS

2.1 WATER REPELLENTS

A. Manufacturers:
1. Huls, Chem-Tret PB VOC
2. Substitutions: Section 01600 - Product Requirements.

2.2 COMPONENTS

A. Silane Water Repellent: Silane penetrating type water repellent, containing 40 percent solids by weight, with maximum 1.44 lb/gal (400 g/L) VOC content.

B. Moisture Vapor Transmission: Maximum 28.33 perms or 50% compared to untreated surfaces, ASTM D1653.

C. Resistance to Accelerated Weathering: No loss in repellency after 2,500 hours, ASTM G53.

D. Reduction of Leakage: Minimum 97 percent water penetration and leakage, ASTM E514.

E. Apply to Tilt-Up Precast Concrete Panels.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01300 - Administrative Requirements: Coordination and project conditions.

B. Verify joint sealants are installed and cured.

C. Verify surfaces to be coated are dry, clean, and free of efflorescence, oil, or other matter detrimental to application of coating.

3.2 PREPARATION

A. Delay Work until concrete substrate is cured a minimum of 60 days.

B. Remove loose particles and foreign matter.

C. Remove oil or foreign substance with a chemical solvent, which will not affect coating.

D. Scrub and rinse surfaces with water and let dry.

3.3 APPLICATION

A. Apply coating in accordance with manufacturer's instructions.

B. Apply in two continuous, uniform coats.

3.4 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01700 - Execution Requirements: Protecting installed construction.

B. Protect adjacent surfaces not scheduled to receive coating.

C. Protect landscaping, property, vehicles.

D. If applied to unscheduled surfaces, remove immediately by methods as instructed by coating manufacturer.

END OF SECTION

SECTION 07 60 00
SHEET METAL WORK

The requirements of the “General Conditions”, the “Supplementary Conditions”, and “Division 1” sections of the Specifications, shall apply to this section of the Specifications.

PART 1 - GENERAL

1.01 SCOPE

A. Work Included: Furnish all labor, materials and equipment necessary for Sheet Metal Work indicated on Drawings and specified herein. All edge metal and perimeter metal flashings shall be in compliance with ES-1 (ANSI/SPRI), NRCA and INTERNATIONAL BUILDING CODE (IBC 2009/CURRENT) All materials for edge metal shall be supplied and warranted by the manufacturer of the Single Ply membrane, as ES-1 Compliant. The Work includes, but is not limited to the following:

1. Base Flashing.

2. Roofers Sheet Metal and Miscellaneous Sheet Metal Work.

3. PVDF 70% (Kynar, Hylar, Trinar) coated Galvalume, 24 gauge, Grade 50 Steel.

4. Flashing Collars and Hoods.

5. Roof Vents.

6. Two-Piece Metal Counter Flashing.

7. Pressure Bars.

8. Utility Enclosures.

9. Scuppers, Receiver/Collectors, Downspouts and Perimeter Edge Metal

10. All downspouts to be seamed using Pittsburgh seaming in lieu of galvanized pop riveting.

B. Color Selections: Refer to Color Legend on the Drawings.

C. Related Sections: The following Work will be provided under other sections of the Specifications, as indicated:

1. Masonry Work - Section 04 20 00.

2. Roof Deck Openings in Roof Deck - Section 05 31 23.

3. Cold-Formed Metal Framing - Section 05 40 00.

4. Wood Blocking, Nailers, Plywood, Etc. - Section 06 10 00.

5. Thermal Insulation - Section 07 21 00.

6. Plaster Veneer System - Section 07 24 00.

7. Flexible Sheet Roofing Systems - Section 07 53 23.

8. Roof Specialties and Accessories - Section 07 70 00.

9. Exterior Field Painting - Section 09 91 13.

10. Awnings - Section 10 73 13.

11. Flashing of Plumbing Vents and Ducts Passing Through Roof - Divisions 22 and 23.

12. Prefabricated Roof Curbs and Equipment Supports - Division 23.

1.02 APPLICABLE STANDARDS - SHEET METAL WORK

A. General: All Work and materials shall conform to the requirements of the Architectural Sheet Metal Manual, Fifth Edition, (Current Edition), hereinafter referred to as “SMACNA Manual”, as issued by the Sheet Metal and Air Conditioning Contractors□□National Association.

1.03 QUALIFICATIONS OF SHEET METAL CONTRACTOR

A. Sheet Metal Contractor shall be a qualified Contracting Firm, with a minimum of five (5) years experience, capable of following the Specifications, and willing to accept instructions in the field.

1.04 QUALITY ASSURANCE

A. ES-1 Edge Standard: As called out in IBC 2009/2012 section 1504.1 … All flashings, perimeter metal, shall be in compliance with ES-1/ANSI SPRI. Manufacturer shall provide proof of compliance demonstrating as per manufacturer not by contractor shop fabrication. Manufacturer shall provide Grade 50 Galvalume AZ50 for Painted PVDF finish or AZ 55 for unpainted bare Galvalume finish.

1.05 WORKMANSHIP

A. Work shall be performed by skilled tradesmen.

B. Comply with the Contract Documents and the oral instructions of the Owner's Representative.

C. Work not fully indicated by the Contract Documents shall be done in accordance with printed instructions of the system manufacturer, or as directed by the Owner's Representative.

D. Consult the Specifications of the other Trades which connect to the Work specified herein, to become thoroughly familiar with the extent of the Work provided by others. Any items not specified under the other Trade headings, but required for completion of Work specified herein shall be provided as part of Work within this section.

1.06 SUBMITTALS

A. Reports: Submit test reports, procedure specifications and certifications as required to substantiate welded connections design and welding qualifications to the Owner's Representative and the General Contractor for review.

B. General: Submit Shop Drawings and Samples to the Architect for review in accordance with the requirements in Section 01 33 23 - Shop Drawings and Samples, and as specified herein.

C. Shop Drawings: Prepare complete detailed Shop Drawings showing all fabricated items and the methods of assembling, jointing, seaming and securing of Sheet Metal Work.

D. Samples: Submit two (2) 8" square Samples of factory finished sheet material, and two (2) 12" long samples of factory fabricated products.

E. Installer's Certificate: Upon completion of Sheet Metal Work, submit a written certification to the Architect and Owner, signed by the manufacturer, stating all flashing were furnished and installed in accordance with ES-1 ANSI/SPRI, IBC (current edition) or exceeding the requirements of, specifications for ten (15) year type flashing. All flashing shall be designed and installed to obtain a watertight installation and shall be warranted as a "SYSTEM WARRANTY" from the roofing manufacturer.

F. Certificates for Credit MR 7: Chain-of-custody certificates indicating that products specified to be made from certified wood comply with forest certification requirements. Include documentation that manufacturer is certified for chain of custody by an FSC-accredited certification body. Include statement indicating cost for each certified wood product.

1.07 MATERIAL DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver only acceptable materials to the site in original boxes, crates, wrappings, properly packaged for protection against damage in transportation, clearly labeled with all pertinent information, to facilitate checking. Upon receipt of materials and components, installer shall examine the shipment for damage and completeness.

B. Storage: Store and field protect materials at the site off the ground and in properly protected clean and dry storage facilities until ready for use. Stack all materials to prevent damage and to allow for adequate ventilation.

1. Roofing Felt: Rolls shall always be stored upright on pallets.

C. Handling: Exercise care in unloading, storing and installing all components to prevent bending, warping, twisting, and surface damage. Replace any damaged materials.

D. Packaging Waste Management: Separate packaging waste materials for reuse, recycling and/or landfill.

1.08 MAINTENANCE CONTRACT

A. Sheet Metal Contractor shall agree to maintain the Sheet Metal Work in a weathertight and watertight condition for a period of five (5) years from the date of Owner's acceptance.

B. During the Maintenance Period, Contractor shall inspect and make immediate emergency repairs to defects or leaks in the Sheet Metal Work within twenty-four (24) hours of notice from the Owner's Representative. Within a reasonable time, restore the affected items to the standard of the original specifications. All emergency and permanent Work during the life of the contract to maintain Sheet Metal Work will be done without cost to the Owner, except in the event that leaks were caused by abuse, lightning, hurricane, tornado, hail storm or other unusual climatic phenomena of the elements, or failure of related Work (except related Roof Metal Work included under the Contract) installed by other parties.

C. Contract agreement to maintain Sheet Metal Work shall be in a written form acceptable to the Owner.

PART 2 - PRODUCTS

2.01 Substitutions: Manufacturers with comparable equivalent products may be acceptable, subject to conformance with these Specifications, the requirements of the Drawings, and the Architect's review. Refer to Specification 01 25 00 – Substitution Procedures.

2.02 MATERIALS

A. General: Furnish all Sheet Metal Work shown on Drawings and specified herein, except for items that are specifically noted on the Drawings or specified to be provided by others.

1. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980 based on testing identical products by a qualified testing agency.

B. Galvalume Sheet Metal: Commercial quality coated bearing sheet steel products of not less than the US standard gauges specified below, unless otherwise noted on the

Drawings. Sheet metal shall have a uniform Coating Designation AZ 50 zinc/aluminum coating applied by the continuous Hot-Dip Process in compliance with ASTM Standard A924 to both sides of the base metal. Each sheet or formed product shall bear the manufacturer's stenciled registered trade name of the product, type of base metal, gauge, and heat number. Materials shall be in compliance with Aluminum Zinc Alloy Coated Steel Sheet: Galvalume ASTM A792/A 792M-05 for lock-forming quality sheet metal.

1. Products and Manufacturer: Galvalume Steel shall be produced in accordance with ASTM A792/A 792M-05, made in America, formed and supplied by the roofing manufacturer. All steel shall be submitted and provide the proper certificate of metal materials that clearly identify manufacturer of origin for the AZ 50 or AZ 55 Galvalume.

2. Sheet Metal Products:

   a. Fascia Flashing: 24 gauge (minimum) Grade 50 Galvalume, AZ 50 PVDF 70% (Kynar, Hylar or **Trinar).**

   b. Metal Cleats: 16-20 gauge (minimum).

   c. Gutters: 22 gauge (minimum) Grade 50 Galvalume, AZ 50 PVDF 70% (Kynar, Hylar or Trinar).

   d. Braces and Brackets: Spacers and hangers shall be minimum 3/16" x 1".

   e. Downspouts: 24 gauge (minimum) Grade 50 Galvalume, AZ 50 PVDF 70% (Kynar, Hylar or Trinar).

   f. Metal Drip Edges: 24 gauge (minimum) Grade 50 Galvalume.

   g. Flashing and Counter Flashing: 24 gauge Grade 50 Galvalume or heavier where required to meet service conditions, AZ 50 PVDF 70% (Kynar, Hylar or Trinar).

   h. Break Formed Metal Trim: 24 gauge (minimum) Grade 50 Galvalume, AZ 50 PVDF 70% (Kynar, Hylar or Trinar).

   i. Sheet Metal Angles: 16 gauge (minimum).

   j. Conductor Heads; 24 gauge (minimum) Grade 50 Galvalume, AZ 50 PVDF 70% (Kynar, Hylar or Trinar).

C. Strainers: Provide compatible wire mesh strainer at downspout locations.

D. Sheet Lead: 2-1/2# Hard Lead Flashing and 4# Soft Lead Flashing, conforming to Federal Specification QQ-L-201, grade.

E. Steel Plates and Bar Stock: Conform to ASTM Standard A36 with galvanized finish conforming to ASTM Standard A123.

F. Pressure Bars: 1-1/2" x 1/8" thick galvanized metal with slotted holes, spaced 2" from each end and at 8" O.C., and length as required to suit conditions. Secure pressure bars with stainless steel anchor bolts and washers. Provide 1/4" wide gap between lengths of bars.

G. Flashing Collars and Hoods: Sleeved flashing collars with banded “hoods” fabricated of 24 gauge galvanized steel as detailed.

H. Roof Vents: Metal roof vents with insect screen as specified herein and caps as detailed on the Drawings. Construct vents of 6" dia., 18 gauge galvanized sheet metal with 4" flanges secured to metal roof deck and flashed into roofing.

I. Two-Piece Metal Counter Flashing:

1. Manufacturer: The Roofing Manufacturer shall provide the reglet as per architectural drawings as a 2 piece compression (spring locked) assembly, warranted, designed and engineered by the roofing manufacture and made part of the System Watertight Warranty.

2. Product: Prefabricated, two-piece flashing system shall not be less than 24 gauge Grade 50 Galvalume standard zinc/aluminum AZ 50 finish and Kynar 70 PVDF coating to match architects selected colors. Provide type as required by Drawings, subject to review by the Architect. Provide ES 1 Compliance documentation in conjunction with IBC Code following ANSI/SPRI and International Building Code section 1504.1 of the IBC code for edge metal. (current IBC edition)

J. Insect Screens: Epoxy coated wire mesh product, 18 x 14 mesh, 0.009 wire diameter, 0.09 lb./sq. ft., with 72% free open air area, as manufactured by McNichols Co., 2502 North Rocky Point Drive, Suite 990, Tampa, FL 33607-1447, (813)282-3828, (800)237-3820; www.mcnichols.com, or comparable equivalent product, subject to review by the Architect.

K. Building Felt: Type II, No. 30, un-perforated asphalt-saturated roofing felt conforming to ASTM Standard D226.

L. Fasteners: #10 x 1-1/4" min. hex head screws, heavy cadmium plated steel, or stainless steel, and neoprene sealing washers not less than 3/4" O.D.

M. Sealants:

1. Roofing Materials Sealant: Provide sealant compatible with roofing system, as recommended by the specified roofing manufacturer, subject to review by the Architect.

2. Metal Joint Sealant:

   a. Manufacturer: Roofing Manufacturers Sealants, made part of the watertight warranty or Tremco, Incorporated, Commercial Sealants & Waterproofing Division approved and warranted by roofing manufacturer.

   b. Product: Conforming to Manufacturers system warranty and/or matching the performance standards of Mono® 555, one-part Acrylic Terpolymer Sealant, meeting U.S. Federal Specification TT-S-230, or other equivalent product subject to review by the Architect. Color selection shall be by Architect.

   c. Volatile Organic Compounds (VOC) Content: paint and coatings product specified herein shall have a VOC content of 250 grams/liter or less when calculated according to 40 CFR 59, subpart D (EPA method 24).

2.03 FINISHES

A. Field Painted Metal Products: Galvalume metal products AZ 50 aluminum zinc coated with 70 PVDF finish to match selection made by the architect. Touch up shall be in strict compliance of the manufacturer guidelines for 70% PVDF finishes.

B. Prefinished Metal Products: Galvalume Grade 50 prefinished metal products shall have a factory-applied, primed, and oven-baked finish based of Kynar Polyvinylidene Fluoride (PVDF) resin by Akzo Nobel, Valspar, PPG or Arkema, Inc. Finish shall be a dispersion coating based on a minimum of 70% Kynar 500®/Hylar 5000®, Trinar® or Fluropon® resins, in strict compliance with the standards for 70% PVDF finish and meeting Energy Star requirements. This finish shall be in strict accordance with the licensed formulator's specification and applied by an applicator approved by the licensed formulator. This finish, based on Kynar 500® resin, Trinar®, Hylar 5000® or Fluropon® shall meet the performance criteria of AAMA 2605 specification and be certified by the formulator as containing PVDF 70% resin manufactured by Akzo Nobel, Arkema, Valspar, PPG. Primer shall have a dry film thickness of 0.2 to 0.4 mils. Topcoat dry film thickness shall be not less than .09 to 1.3 mil thickness on the exposed finished surface of the metal product. Dry film thickness shall be in accordance with ASTM D7091 - Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals (formerly ASTMStandard D1400).

   1. Application: 70% PVDF resin-based coating application method to substrates shall be in accordance with Authorized Licensee's recommended mil thickness, subject to review by the Architect.

   2. Colors: As indicated on the Drawings or selected by the Architect.

a. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980 based on testing identical products by a qualified testing agency.

b. PVDF Testing Standards as listed:

PAINT FINISH TESTING:

Abrasion	ASTM D 968
Accelerated Weathering	ASTM D 822, ASTM-G153
Acid Resistance	ASTM D 1308
Chalk	ASTM D 4214 Method A
Cleveland Condensing	ASTM D 4585
Color Change	ASTM D 2244
Cross Hatch Adhesion	ASTM D 3359
Cure Test	ASTM D 5402
Cyclic Salt Fog/UV	ASTM D 5894
Direct/Reverse Impact	ASTM D 2794
Fire Hazard	ASTM E 84
Florida Exterior	ASTM D 2244/ASTM D 4214 Method A
Gloss	ASTM D 523 60°
Humidity Resistance	ASTM D 2247
Mandrel Bend	ASTM D 522 1T, 2T, 3T
Pencil Hardness	ASTM D 3363
Salt Spray	ASTM B 117
Sulfur Dioxide	ASTM G 87 (aka Kesternich Test)
Water Immersion	ASTM D 870

PART 3 - EXECUTION

3.01 EXAMINATION

A. Refer to Section 01 31 00 – Project Management & Coordination

B. Refer to Section 01 73 00 - Execution

3.02 WORKMANSHIP - SHEET METAL WORK

A. Work shall be accurately formed to sizes, shapes and dimensions indicated and detailed, with all angles and lines in true alignment. All Work shall be straight, sharp, and erected plumb and level in proper plane without bulges or waves. Form sheets with a bending brake to the profiles detailed. Shaping and hand seaming shall be shop processed insofar as practical. AND ES1 COMPLIANT, supplied, manufactured, engineered by the roofing manufacturer, made part of the warranted roof system.

B. Fabricate and erect all Sheet Metal Work to perform satisfactorily.

C. Fabricate all items in maximum lengths and hold all joints to a minimum.

D. Cooperate with all other subcontractors, and arrange for installation of sheet metal in connection with their Work.

3.03 INSTALLATION OF FLASHING AND SHEET METAL WORK

A. Flashing Collars and Hoods:

1. Where pipe or conduit extends through roof, and where other similar roof penetrations occur, furnish and install flashing collars for all locations as shown on Drawings. Furnish assemblies complete, including top “hood” portions, copper tension straps and non-corrosive bolts.

2. Flashing collars shall be fabricated with galvanized sheet iron, consisting of a 3" diameter seamed tube (larger diameter if required by size of item penetrating roof), min. 8" high with a 4" wide circular flange at the bottom. Flashing collars to be one piece, but, if joined in field shall be soldered completely tight including flange. Provide separate top “hood” portion, fabricated from galvanized sheet metal to shape indicated on Drawings. Provide each “hood” portion with a galvanized steel tension strap, for securing “hood”, and brass or stainless steel bolt for securing strap.

3. Install the flashing assemblies by securing collar flanges to roofing, embedding in cement over top ply of roofing, and sealing with sealant as per detail.

4. At each flashing collar with sleeve, install top “hood” portion in approved elastic compound, place tension straps in position, and bolt same tightly in place. Seal top portion of “hood” by filling with flared out portion of “hood” with plastic sealant.

B. Prefinished Galvanized Metal Fascia Flashings:

1. Furnish and install prefinished galvanized metal fascia flashings, formed to shapes as shown on Drawings.

2. Fascia flashings shall be same as shown at FIGURE 2-1B, FORMED GRAVEL STOP FASCIA - DESIGN DATA, of SMACNA Manual, to fit into continuous sheet metal cleats of metal compatible with the galvanized metal secured to wood blocking at top of wall. All nailing shall be concealed.

a. Nail continuous cleats to the wood blocking at 10" O.C. and in compliance with ES -1(wood blocking by Rough Carpentry Trade). Form bottom edges of cleats out at a 45° angle, to fit drip shape of flashing. Install a continuous, single layer of waterproof building paper (conforming to ASTM Standard C171) over blocking and cleats, trimmed so that it will not be visible when coping is installed.

b. Form flashings in 10 ft. long sections, and joined to allow for longitudinal expansion. Stiffen free ends (bottom edges of vertical sides) of flashing by seaming back 1/2", and bending out 1/2" to form drip. Lock flashings into continuous cleats at face side of wall and fasten to wood blocking with screws at 2'-0" O.C. Overlap sections at joints a minimum of 4".

c. Corners of all flashings shall be mitered, seamed, and sealed.

C. Kynar 70% PVDF finish Gutters, Downspouts and Gravel Stops:

1. Fabricate and install prefinished gutters and downspouts as detailed on Drawings and specified herein.

2. Hanging gutter installation shall conform to similar detail at FIGURE 1-12 – HANGING GUTTER INSTALLATIONS - GENERAL of SMACNA Manual, and shall consist of continuous cleat, gutter, gutter spacer, and gutter brackets as shown on Drawings.

3. Fabricate gutter of Galvalume AZ50 Grade 50, PVDF 70% coating in Rectangular Type Gutter Style, per “Style I” shown on FIGURE 1-2 RECTANGULAR TYPE GUTTER STYLES OF SMACNA Manual, and as detailed on the Drawings.

4. Furnish and install strainers, inserted into downspout inlets. Furnish and install all outlet tubes, and gutter ends.

5. Furnish and install downspouts of plain round design as detailed on the Drawings, fabricated of galvanized sheet steel, in sizes and locations shown on the Drawings.

6. Fabricate downspout hanger according to FIG 1-35D, FIGURE 1-35, DOWNSPOUTS - HANGER DESIGN of SMACNA Manual. Secure downspouts with hangers to wall at 6 ft. centers, maximum.

7. All fasteners and accessories shall be of compatible material.

8. Gravel Stops: Fabricate perforated gravel stops of 12 gauge galvanized sheet, in lengths not exceeding 10 ft. Install stops, at gutters, over prepared nailer onto roof, and secured with neoprene-washered large-head stainless steel nails in 2

rows staggered with nails 6" apart each row, giving an actual 3" separation between fastenings. Lap each length 2", and drive 2 nails into each lap.

9. Conductors/Collectors/Receivers shall be custom fabricated to match the opening at the through wall scupper. The Scupper shall provide for a weld between the roof membrane, and the membrane through the wall at the scupper. The scupper shall provide a monolithic connection, manufactured and warranted by the membrane manufacturer.

D. Utility Enclosures:

1. Furnish and install curb mounted, two-piece, enclosure type, and 20 gauge galvalume sheet metal flashings to cover locations where pipes and conduit penetrate the roof. Furnish complete enclosure assemblies, including sheet metal screws.

2. Fabricate two-piece enclosure assembly as detailed on Drawings. Bottom section shall be 12" high, square sleeve sized to fit on roof curb, with slots at one side of sleeve to fit over the utility lines, and closure piece at same side, similarly slotted to fit over utility lines, covering former slots. Fabricate removable top section as cover to fit over bottom section, with drip formed edges on all sides, and projecting hood portion at side with sheet metal slotted sleeve sheets fitted over utility line penetrations to form a weathertight seal around the pipes.

3. Fit and install bottom section on roof curb, securing with screws and neoprene/metal washers. Receive foil face batt insulation from Thermal Insulation Contractor. Install insulation as indicated on the Drawings with the foil face down. Fit top section down over bottom section, securing with sheet metal screws spaced 8" O.C.

E. Metal Drip Edges: Brake-form prefinished galvanized sheet metal to provide 3-inch roof deck flange and 1-1/2 fascia flange with 3/8-inch drip at lower edge. Furnish in lengths of 8 to 10 feet.

F. Miscellaneous Flashing and Sheet Metal Work: Complete all Miscellaneous Flashing and Sheet Metal Work indicated or required, whether or not specified herein.

G. Pitch Pockets: PITCH POCKETS ARE PROHIBITED.

3.04 ROOF VENT INSTALLATION

A. Install vents through roof where shown on the Drawings. Coordinate with Roofing Contractor. Final flashing shall be by Roofing Contractor.

3.05 REPLACEMENT

A. Promptly replace all defective materials and workmanship, at no cost to the Owner, to the satisfaction of the Architect.

3.06 PAINTING

A. Field Painting: Finish painting of materials where required by Drawings and/or field conditions shall be by the Painting Contractor.

B. Prefinished Materials:

1. Touch-up prefinished items damaged during installation and in 100% compliance of PVDF provider.

2. Paint shall be 70% PVDF and color to match factory-applied shop finish.

2.02 Kynar/Hylar/Trinar/Fluropon Polyvinylidene Fluoride (PVDF) finish surface imperfections or minor scratches shall be touched-up using a coating based upon 70%PVDF resin as supplied by Licensee.

B. Compatibility: Paint shall be compatible with roofing materials.

3.076 CLEAN-UP

A. Work Required: Clean-up any Work soiled in the performance of Work under this section.

B. Debris and Waste Materials: During progress of the Work the premises shall be kept free of all debris and waste materials resulting from the Work of this section. During progress of the Work, upon completion of Work, and before final acceptance of the Work, remove all debris and rubbish from the site, and dispose of legally.

C. Unused Materials, Tools, and Equipment: Upon completion and before final acceptance of the Work, remove all unused materials, tools, and equipment from the site.

D. Waste Management: Collect field generated construction waste created during construction or final.

END OF SECTION

SECTION 07 90 00
JOINT PROTECTION

The requirements of the “General Conditions”, the “Supplementary Conditions”, and “Division 1” sections of the Specifications, shall apply to this section of the Specifications.

PART 1 - GENERAL

1.01 SCOPE

A. Work Included: Provide all labor, materials, equipment, and services necessary for Caulking Work indicated on the Drawings and specified herein. Work includes, but is not limited to the following:

1. Preparation of surfaces.

2. Exterior and interior caulking of the following joint types. Exterior caulking shall be done with sealants, and interior caulking shall be with caulking compounds, however, selected interior locations noted on Drawings or specified herein will require sealant in lieu of caulking compound.

a. Between dissimilar materials, including concrete or masonry to metal (aluminum, steel, stainless steel), and steel to aluminum (at non-metallic shims).

b. Between similar materials as detailed, unless specifically excluded.

3. Expansion and control joints.

4. Between thresholds and adjoining materials.

5. Exterior joints where Mechanical and Electrical Work penetrates concrete or masonry.

6. Wherever indicated by the words, “Seal”, “Sealer”, “Sealant”, “Caulk”, or “Caulking” on the Drawings.

7. Acoustical Sealant.

8. Compressible Back-up Material as required.

9. Firestopping Systems.

10. Cleaning and removing excess materials.

B. Related Sections: The following items of related Work will be provided under other sections of the Specifications:

1. Cast in Place Concrete - Section 03 30 00.

2. Unit Structural Masonry - Section 04 23 0.

3. Rough Carpentry - Section 06 10 00.

4. Thermal Insulation - Section 07 21 00.

5. Plaster Veneer System - Section 07 24 00.

6. Sheet Metal Work - Section 07 60 00.

7. Fire Safing - Section 07 84 56.

8. Hollow Metal Doors and Frames - Section 08 11 13.

9. Aluminum Framed Entrances and Storefronts - Sections 08 41 13.

10. Gypsum Wallboard - Section 09 29 00.

11. Paints and Coatings - Section 09 90 00.

12. Caulking and Mastic Operations at Roof and Sealing Sheet Metal Flashings - By Roofing Contractor.

1.02 QUALITY ASSURANCE

A. Environmental Requirements: Paint products such as touch-up field painting and isolation coatings shall comply with all applicable Federal and State Regulations on Volatile Organic Compounds (VOC). PAINT

1.03 SUBMITTALS

A. General: Submit Product Data and Samples to the Architect for review in accordance with the requirements in Section 01 33 23 - Shop Drawings and Samples, and as specified herein.

B. Reports: Submit test reports, procedure specifications and certifications as required to substantiate welded connections design and welding qualifications to the Owner’s Representative and the General Contractor for review.

C. Product Data: Submit manufacturer’s specification and recommendations for each type of sealant, caulking compound, expansion joint cover, and miscellaneous material required.

D. Sealant Compatibility and Test Reports: Provide reports from sealant manufacturer certifying that materials forming joint substrates of system have been tested for compatibility and adhesion with joint sealants; include sealant manufacturer's interpretation of results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion.

E. Samples: Submit Samples of sealants and caulking for review and approval by the Architect. Do not commence Work until the Architect's written approval of the Samples has been received.

1. General: Submit two (2) 12" long Samples of each color and type of exposed-to-view sealant and caulk. Install Sample in 1/2" wide joints between two (2) strips of material representative of exposed surfaces adjacent to joint sealants. Manufacturer's color charts and/or color swatches will not be accepted as Samples.

2. Expansion Joint Covers: Provide samples of sealant system in colors as required to match with adjacent finished surfaces.

1.04 PRODUCT DELIVERY AND STORAGE

A. Delivery: Ship material to job site in plainly marked, original containers, with seals unbroken. Do not ship opened or partially full containers to the site. Materials will be subject to inspection, and rejection at any time. Unload materials at locations designated by the General Contractor.

B. Storage: All materials shall be stored in sheltered enclosures with ambient temperature range of 60 to 80 degree F° at the site until ready for use.

C. Material Shelf Life: Do not retain material at the jobsite which has exceeded the shelf life recommended by the manufacturer.

D. Packaging Waste Management: Separate packaging waste materials for reuse, recycling and/or landfill.

1.05 PROJECT CONDITIONS

A. Temperature and Temporary Enclosures: Do not install compounds when ambient air temperature is less than 40°F. or when recesses are wet or damp. Temporary enclosures and temporary heat may be provided to maintain temperature requirements.

B. Protection: Adjacent finished surfaces shall be protected from damage, by masking or other approved methods, prior to sealing. Remove protection when no longer needed, clean adjacent surfaces smeared by compounds.

1.06 SCAFFOLDING

A. Furnish, erect, and maintain all scaffolding and tarpaulin enclosures, complying with governing code requirements. Erect apparatus at times and locations so as not to delay any part of Work. When Work
has been completed, promptly dismantle all scaffoldings and remove from site.

1.07 WARRANTY

A. General Requirements: The warranty shall state that the Contractor will make good at his expense, all imperfections which may develop in Caulking and Sealing Work during the warranty period, as well as damage to other Work caused by imperfections or by repairing imperfections.

B. Sealant Work: Execute a warranty in the approved written form, warranting all Sealant Work to remain in a serviceable, watertight, elastic, adhesive and perfect condition for a period of not less than three (3) years from date of Owner's acceptance of the installation.

C. Caulking Work: Execute a warranty in the approved written form, warranting all Caulking Work to remain in a serviceable, watertight, elastic, adhesive and perfect condition for a period of not less than two (2) years from date of Owner's acceptance of the installation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. Colors: Sealants and caulking compounds shall be of colors as selected and/or reviewed by the Architect to match adjacent finish surfaces.
2. Grade and Consistency: Sealants and caulking compounds shall be of correct grade and consistency for application, to flow easily from application gun, and to tool without excessive tackiness.

3. Material Properties: Set sealants and caulking compounds shall be waterproof, elastic, non-staining and non-corrosive; firm but not brittle hard; remain plastic without cracking at low temperatures; non-sagging at temperatures up to 120°F for 24 hours.

4. Substitutions: Manufacturers with comparable equivalent products may be acceptable, subject to conformance with these Specifications, the requirements of the Drawings, and the Architect's review. Refer to Specification 01 25 00 – Substitution Procedures.

5. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

   a. Architectural Sealants: Not more than 250 g/L.

   b. Sealant Primers for Nonporous Substrates: Not more than 250 g/L.

   c. Sealant Primers for Porous Substrates: Not more than 775 g/L.

B. Sealants:

1. Sealants - General: Multiple-component polyurethane sealant, non-sag type, conforming to ASTM C920 - Standard Specification for Elastomeric Joint Sealants, Type M, Grade NS, and Federal Specification TT-S-00227E, Type II, Class A, by one of the following manufacturers:

   a. Manufacturer: BASF Construction Chemicals, LLC - Building Systems, 889 Valley Park Drive, Shakopee, MN 55379, (800)243-6739 or (800)433-9517; www.BuildingSystems.BASF.com.

      1) Product: Sonneborn® “Sonolastic® NP 2Ô.

   b. Manufacturer: Pecora Corporation, 165 Wambold Road, Harleysville, PA 19438, (800)523-6688 or (215)723-6051; www.pecora.com.

      1) Product: Dynatrol® II.

   c. Manufacturer: Tremco, Incorporated, Commercial Sealants & Waterproofing Division, 3735 Green Road, Beachwood, OH 44122, (800)321-7906 or (216)292-5000; www.tremcosealants.com.

      1) Products: Dymeric 240 or Dymeric® 240FC.

2. Sealant for Exterior Plaster Veneer System: Product shall be acceptable to Plaster Veneer System Manufacturer. Sealant shall conform to ASTM Standard C920, Grade NS, Class 50, by one of the following manufacturers:

   b. Manufacturer: Dow Corning Corporation, South Saginaw Road, Midland, MI 48686, (800)662-0661 or (989)496-6000; www.dowcorning.com.

      1) Product: Dow Corning® 790 Silicone Building Sealant, one-component silicone sealant.

c. Manufacturer: Tremco, Incorporated, Commercial Sealants & Waterproofing Division, 3735 Green Road, Beachwood, OH 44122, (800)321-7906 or (216)292-5000; www.tremcosealants.com.

1) Products: Spectrem® 1 or Spectrem® 3 one-component silicone sealant, “Spectrem® 4-TS” multiple-component silicone sealant or “Dymeric® 240FC” multiple-component polyurethane sealant.

3. Sealant for Traffic Areas: One-component polyurethane sealant, non-sag type, for use in traffic areas, per ASTM Standard C920, by one of the following manufacturers:

a. Manufacturer: BASF Construction Chemicals, LLC - Building Systems, 889 Valley Park Drive, Shakopee, MN 55379, (800)243-6739 or (800)433-9517; www.BuildingSystems.BASF.com.

1) Product: Sonneborn® Sonolastic® NP 1Ô.

b. Manufacturer: Tremco, Incorporated, Commercial Sealants & Waterproofing Division, 3735 Green Road, Beachwood, OH 44122, (800)321-7906 or (216)292-5000; www.tremcosealants.com.

1) Products: Dymonic® FC or Vulkem® 45 SSL.

c. Manufacturer: LymTal International, Inc., 4150 S. Lapeer Road, Lake Orion, MI 48359, (248)373-8100; www.lymtal.com.

1) Product: Iso-Flex® 830, Joint Sealant.

4. Acoustical Sealant: Equivalent to SHEETROCK® Brand Acoustical Sealant as manufactured by United States Gypsum Company, A Subsidiary of USG Corporation, 550 West Adams Street, Chicago, IL 60661, (800)874-4968; www.usg.com.

a. Product Requirements: Acoustical sealant shall be an acrylic, latex-based caulk for use as a joint sealant for sealing sound-rated systems. Sealant shall be non-staining and paintable. Sealant shall meet ASTM Standard C834 and tested in accordance with ASTM Standard E90.

b. Surface Burning Characteristics: Classified by UL, and tested in accordance with ASTM Standard E84:

1) Flame Spread: 0.

2) Smoke Developed: 0.

c. VOC Content: Less than 15 grams/liter.

C. Caulking Compounds:

1. Caulking Compounds - General: One-part, acrylic latex sealant, non-sag type, conforming to ASTM C834 - Standard Specification for Latex Sealants, by one of the following manufacturers:

a. Manufacturer: Pecora Corporation, 165 Wambold Road, Harleysville, PA 19438, (800)523-6688 or (215)723-6051; www.pecora.com.

1) Product: AC-20® + Silicone.

b. Manufacturer: Tremco, Incorporated, Commercial Sealants & Waterproofing Division, 3735 Green Road, Beachwood, OH 44122, (800)321-7906 or (216)292-5000; www.tremcosealants.com.

1) Product: Tremflex® 834.

D. Primers: Provide primer products recommended by the sealant or caulking compound manufacturer, to provide adhesion of the sealant and caulking compounds to, and to prevent staining of adjacent surfaces.

E. Back-up Material:

1. Manufacturer: Construction Foam Products, a Division of Nomaco, Inc., 501 NMC Drive, Zebulon, NC 27597, (800)345-7279 or (919)380-6640; www.cfoamproducts.com.
2. Product: Round, Foam Rod, cylindrical, flexible, extruded, compressible closed cell, polyethylene foam backer rod, Type C - per ASTM Standard C1330, such as Closed-Cell Backer Rod “HBR®”. Provide backer rods in diameters 1/2 larger than width of joints in which rods are installed.

2.02 FIRESTOPPING SYSTEMS:

A. Construction Penetrations: UL Listed firestopping system for through-penetrations shall meet the requirements of ASTM Standard E814 (UL 1479) and provide a fire rating equal to that of construction being penetrated. Backing material and sealant shall not contain asbestos, halogens, and volatile solvents, and shall be flexible to allow for normal movement of building and penetrating items without adversely affecting the integrity of the system.

B. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Architectural Sealants: Not more than 250 g/L.

2. Sealant Primers for Nonporous Substrates: Not more than 250 g/L.

3. Sealant Primers for Porous Substrates: Not more than 775 g/L.

C. Firestopping Systems: Provide system/products by one of the following manufacturers:

1. Manufacturer: Hilti, Inc., 5400 South 122nd. East Avenue, Tulsa, OK 74146, (800)879-8000 or (918)252-6000; www.us.hilti.com.

   a. System/Products: Hilti Firestop Systems.

2. Manufacturer: Pecora Corporation, 165 Wambold Road, Harleysville, PA 19438, (800)523-6688 or (215)723-6051; www.pecora.com.

   a. System/Products: Firestop Systems-UL® Classified.

3. Manufacturer: RectorSeal® Corporation, 2601 Spenwick Drive, Houston, TX 77055, (800)231-3345 or (713)263-8001; www.rectorseal.com.

   a. System/Products: Metacaulk® Firestop Materials.

4. Manufacturer: Tremco, Incorporated, Commercial Sealants & Waterproofing Division, 3735 Green Road, Beachwood, OH 44122, (800)321-7906 or (216)292-5000; www.tremcosealants.com.

   a. System/Products: TREMstop® Fire Protection Products and related products.

D. Comparable Systems/Products: Comparable equivalent products of other manufacturers may be acceptable, subject to conformance with these Specifications and the Architect's review.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Refer to Section 01 31 00 – Project Management & Coordination

B. Refer to Section 01 73 00 - Execution

3.02 INSPECTION

A. Inspect all joints to be caulked. Notify the General Contractor in writing (copy to the Architect), of any condition that will prevent the required performances of the compounds, for correction. Installation of the compounds will be considered Contractor's acceptance of the joints. Promptly repair or replace all Caulking and Sealing Work that becomes damaged or defective because of defects in the joint surfaces,
to the satisfaction of the Architect, and at no cost to the Owner.

3.03 PREPARATION

A. Joints to be caulked will be raked out or left open 3/8" to 1/2" deep, maximum by others. Joint width to be 1/2" maximum, 3/8" width for control joints.

B. Clean recesses to receive compound so as be free of dirt, dust, loose material, oil, grease, and all other substances detrimental to the material's performance. Remove lacquer or other protective coatings from metal surfaces, without damage to the surface, prior to sealing. Recesses shall be dry when compounds are installed.

C. If sealing or caulking compounds cause stains on, or do not adhere to, adjacent materials, or if recommended by compound manufacturer, prime all surfaces with specified primer in accordance with compound manufacturer's recommendations.

D. Width or depth of the joint shall be not less than 1/4". In joints up to 1/2" wide, the depth of the sealant shall be equal to the width. In joints wider than 1/2", but not exceeding 1", the depth shall be maintained at 1/2". Joints wider than 1" shall maintain a width to depth ratio of 2 to 1. Fill recesses with backer rod, held back the specified depth from the surface, where joint depths exceed the specified maximums.

E. If joints to receive sealant are filled with other than backer rod specified material, adhere a strip of polyethylene film over the exposed edge of the material, to break the bond of the sealant.

F. Use materials as manufactured, without additives or adulterations. Mix two (or three) component materials until thoroughly and uniformly blended, and then install such materials prior to start of hardening or curing of the materials.

3.04 INSTALLATION OF SEALANTS AND CAULKING COMPOUNDS - GENERAL

A. Sealants and caulking compounds for use in any one area shall be of one brand throughout, mixing of brands on a single wall or in a single room or area is prohibited.

B. All Work shall be done by experienced workmen, in accordance with manufacturer's recommendations, and as specified herein.

C. Install all sealing and caulking compounds immediately after the adjoining Work of other trades is in proper condition to receive same, but before Work has been given applied finishes such as painting or staining, and in a manner to prevent damage occurring by reason of any delay in providing the Work specified herein. No sealing or caulking shall be done until the General Contractor has inspected and approved the preparatory Work and the condition of the adjoining Work.

D. Fill joints completely with sealant and/or caulking compound, without extra cost to the Owner, regardless of variance in joint widths.

E. Install sealants and caulking compounds under pressure, without smearing adjacent surfaces. Compounds shall have full and uniform contact and adhesion with sides of joint recesses.

F. Finish sealants and caulking compounds in recesses, in angular surfaces, with a smooth surface, flush with face of material at each side. Finish sealants and caulking compounds, in recesses, between masonry and jambs, with a smooth surface, flush with the face of the metal frame on one side and with face of masonry on the other side. Finish sealants and caulking compounds in recesses, in flush surfaces (including masonry walls), with a smooth concave surface, flush with face of material at each side.

G. Surfaces of sealants and caulking compounds in joints shall be smooth and even, free from dirt, stain or other defacements, and be uniform in color throughout.

H. Tooling of joints will be allowed, provided that such operations do not damage the seal or tear the compounds.

3.05 INSTALLATION OF SEALING COMPOUNDS

A. Building Exterior: Fill with sealant, as required to provide a weathertight condition, all exposed joints that are not subject to movement but require finishing, and all joints that are not subject to excessive movement. Principal locations shall include, but not be limited to, the following:

1. Joints between Dissimilar Materials: All exposed joints in the exterior walls, between dissimilar materials, including masonry or concrete construction to metal (aluminum, steel, stainless steel) such as door frames, frames for glass and other miscellaneous openings; and steel to aluminum (at non-metallic shims).

2. Joints between Similar Materials: All joints between similar materials such as masonry control joints, etc., unless specifically excluded.

3. Noted Locations: Wherever indicated by the words “seal” or “sealant” on the Drawings.

4. Exterior Plaster Veneer: Joint filler, primer, and bond breaker shall be in accordance with the sealant manufacturer's specifications and instructions. Application of the sealant shall be as recommended by the plaster veneer system manufacturer, subject to review by the Architect.

    a. Back-up Material: Sealant backer rods, as required by field conditions shall be of closed cell.

    b. Textured Finishes or Base Coat Surfaces: Sealant shall not be applied directly to textured finishes or base coat surfaces. Plaster veneer system base coat surfaces subject to be in contact with sealant shall be coated with acrylic coating or pigmented acrylic primer. Coordinate Work with Plaster Veneer System Contractor.

B. Building Interior: Fill with sealant, as required to provide a closed condition, all exposed joints that are subject to movement, but not excessive movement, or where specifically noted on Drawings. Principal locations shall include, but not be limited to the following:

1. Joints Between Dissimilar Materials: All exposed joints in exterior and interior walls, between dissimilar materials generally, including masonry or concrete to metal (aluminum, steel, stainless steel), such as door frames, frames for glass and other openings, and steel to aluminum (at non-metallic shims).

2. Joints Between Similar Materials: All exposed joints between similar materials such as masonry control joints, unless specifically excluded.

C. Acoustical Sealant: Comply with sealant manufacturer's written directions and instructions for preparation and application of sealant.

1. Coordinate with Gypsum Wallboard Contractor for installation of coustical sealant at sound-rated partitions where indicated on the Drawings; applied in accordance with ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications, using conventional caulking equipment.

2. At partition walls, provide continuous beads of acoustic sealant at juncture of both faces of runners with floor and ceiling construction, and wherever gypsum board abuts dissimilar materials, prior to installation of gypsum board.

3. At ceilings, provide continuous beads of sealant wherever gypsum board abuts dissimilar materials.

4. Provide continuous bead of sealant behind faces of control joints prior to installation of control joint accessories.

5. After installation of gypsum board base layer(s), fill open space between gypsum board and floor, ceiling and dissimilar vertical construction with continuous sealant beads after installation of face layer.

6. At openings and cutouts, fill open spaces between gypsum board and fixtures, cabinets, ducts and other flush or penetrating items, with continuous bead of sealant.

7. Seal sides and backs of electrical boxes to completely close off openings and joints.

8. Sound Flanking Paths:

   a. Where sound-rated partition walls intersect non-rated gypsum board partition walls, provide acoustical sealant at extended sound-rated construction to completely close sound flanking paths through non-rated construction.

   b. Seal joints between face layers at vertical interior angles of intersecting partitions.

3.06 INSTALLATION OF CAULKING COMPOUNDS

A. Building Interior: At interior of building, fill with caulking compound, all exposed joints not subject to movement that require a finished appearance. Principal locations shall include, but not be limited to the following:

1. Joints in interior walls, between masonry and metal frames.

2. Joints in interior walls, between masonry and adjacent construction.

3. Wherever indicated by the words “caulk” or “caulking” on the Drawings, except if the locations are specified to be sealed.

3.07 INSTALLATION OF FIRESTOPPING SYSTEM

A. Prepare substrate surfaces to insure proper support for firestop system. Clean surfaces of all foreign material including loose debris, dirt, oil, grease, and wax. Install firestop material in accordance with manufacturer’s printed instructions and UL requirements.

3.08 CLEANING

A. Excess Sealing and Caulking Materials: Remove excess sealing and caulking materials from adjacent surfaces before materials have set up. Follow manufacturer's instructions for removal of sealing and caulking materials from finished surfaces. Repair surfaces

damaged by sealing and caulking operations. Obtain written approval, from the Architect, of the entire installation after completion.

B. Debris and Waste Materials: During progress of the Work, keep the premises free of debris and waste materials resulting from Sealing and Caulking Work. During progress of the Work, upon completion of Work, and before final acceptance of the Work, remove all debris and rubbish from the site, and dispose of legally. Upon completion and before final acceptance of the Work, remove unused materials, tools, and equipment from the site.

C. Waste Management: Collect field generated construction waste created during construction or final.

END OF SECTION

SECTION 09 24 23
CEMENT PLASTER

PART I - GENERAL

1.01 SUMMARY:

This document is intended to be used in preparing specifications for projects utilizing Commercial Cement Plaster 1 by Dryvit applied to concrete or CMU substrates. For complete product description and usage refer to:

A. Dryvit Commercial Cement Plaster 1 Data Sheet, DS812
B. Dryvit Commercial Cement Plaster 1 Installation Details, DS824
C. Dryvit Commercial Cement Plaster Base™ – Sanded, DS817
D. Dryvit Commercial Cement Plaster Base™ – Concentrate, DS818

1.02 RELATED SECTIONS

A. Project Meetings - Section 01 31 19
B. Concrete - Section 03 30 00
C. Unit Masonry - Section 04 20 00
D. Cold-Formed Metal Framing - Section 05 40 00
E. Wood Framing - Section 06 11 00
F. Flashing - Section 07 60 00
G. Joint Protection - Section 07 90 00
H. Gypsum Sheathing - Section 06 16 43
I. High Performance Coatings – Section 09 96 00

1.03 REFERENCES

A. International Building Codes (IBC and IRC)
B. American Concrete Institute ACI 524R: Guide to Portland Cement Plastering
C. Portland Cement Association: Portland Cement Plaster (Stucco) Manual
D. ASTM A 526: Steel Sheet, Hot-Dip Galvanized, Commercial Quality
E. ASTM C 150: Standard Specification for Portland Cement
F. ASTM C 754: Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
G. ASTM C 847: Standard Specification for Metal Lath
H. ASTM C 897: Standard Specification for Aggregate for Job Mixed Portland Cement Based Plasters
I. ASTM C 920: Standard Specification for Elastomeric Joint Sealants
J. ASTM C 926: Standard Specification for Application of Portland Cement-Based Plaster
K. ASTM C 1007: Standard Specification for Installation of Load Bearing (Transverse and axial) Steel Studs and Related Accessories.
L. ASTM C 1063: Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster
M. ASTM C 1328: Standard Specification for Plastic (Stucco) Cement
N. ASTM D 226: Standard Specification for Asphalt Saturated Organic Felt Used in Roofing and Waterproofing
O. ASTM D 1784: Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
P. ICC-ES AC11: Cementitious Exterior Wall Coatings

1.04 SUBMITTALS

A. Submittal requirements by the contractor are to be indicated in the construction documents as required, including:
1. Product literature, samples or mock up.
2. Finish sample indicating color and texture for approval by architect/owner.

1.05 DESCRIPTION

A. Commercial Cement Plaster 1 consists of Dryvit CCP Base - Sanded or Concentrate*, Dryvit acrylic primer and Dryvit acrylic coating or finish. CCP Base may be applied directly to the properly prepared concrete or CMU substrate or to metal lath and water-resistive barrier (as specified).
*Other approved scratch and brown coats may be acceptable and approved by Owner. Consult Dryvit Systems, Inc. for specifics.

1. Design Requirements:
   a. Substrates shall comply with local code requirements and practices for use under cement plaster and shall be:
      2) CMU masonry
   b. The roofing materials shall be loaded onto the roof and interior wallboard stocked in the building prior to the installation of the Commercial Cement Plaster 1.
   c. Deflection of substrate systems shall not exceed L/360.
   d. The slope of inclined surfaces shall not be less than 6:12 (27°) and the length shall not exceed 12 in (305 mm).
   e Slopes on windowsills projecting 4 in (102 mm) or less, shall not be less than 3:12.
   f. Expansion joints:
      1) Design and location of expansion joints shall be determined by the project design professional and indicated on the contract documents. As a minimum, expansion joints in the Commercial Cement Plaster 1 are required at the following locations:
         a) Where expansion joints occur in the substrate system.
         b) Where building expansion joints occur.
         c) At floor lines in wood frame construction.
         d) Where Commercial Cement Plaster 1 abuts dissimilar materials.
         e) Where the substrate changes.
         f) Where significant structural movement occurs such as changes in roofline, building shape or structural system.
   g. Control joints:
      1) Design and location of control joints shall be determined by the design professional in general accordance with ASTM C 1063 and indicated on the contract drawings. As a minimum, control joints shall be located at the following locations:
         a) Corners of openings
         b) Such that monolithic wall areas do not exceed 144 ft^2 (13.4 m^2)
         c) Length to width ratios of wall areas shall not exceed 2.5:1
         d) Maximum spacing of control joints shall not exceed 18 ft (5.5 m)
   h. Sealants
      1) Use, type and location of sealants is the responsibility of the project designer and shall be indicated on the contract documents.
      2) Refer to Section 07900
      3) Refer to Dryvit publication DS153 for a list of sealants that have been tested for compatibility with Dryvit products.

i. Vapor Retarders
1) Use and location of vapor retarders within a wall assembly is the responsibility of the project designer and shall comply with local building code requirements. Type and location shall be noted on the contract documents. Vapor retarders may be inappropriate in certain areas and can result in condensation within the wall assembly when incorrectly used. Refer to Dryvit publication DS159 for additional information.

j. Flashing shall be provided at all roof-wall intersections, windows, doors, chimneys, decks, balconies, and other areas as necessary to prevent water penetration behind Commercial Cement Plaster 1.

2. Performance Requirements: As a minimum, Dryvit Commercial Cement Plaster 1 products shall meet:
a. ASTM C 1328: Standard Specification for Plastic (Stucco) Cement

Finish Testing			
Test	**Test Method**	**Criteria**	**Results[1]**
Surface Burning Characteristics	ASTM E 84	ICC and ANSI/EIMA 99-A-2001 Flame Spread <25 Smoke Developed <450	Passed
Flexibility[2]	ASTM D 522 Method B	No ICC or ANSI/EIMA Criteria	Passed: 1.5" diameter @ 73 °F
Water Vapor Transmission	ASTM E 96 Procedure B	ICC: Vapor Permeable No ANSI/EIMA Criteria	40 Perms
Accelerated Weathering	ASTM G 154 Cycle 1 (QUV)	ANSI/EIMA 99-A-2001 2000 hours: No deleterious effects[3]	5000 hours: No deleterious effects[3]
	ASTM G 155 Cycle 1 (Xenon Arc)	ICC: 2000 hours: No deleterious effects[3]	2000 hours: No deleterious effects[3]
Chalk Rating	ASTM D 4214 after ASTM G 154 Cycle 1	No ICC or ANSI/EIMA Criteria	Chalk rating: 8 after 5000 hours QUV
Instrumentally Measured Color Difference[4] (includes yellowing)	ASTM D 2244 CIELAB, 10° Observer after ASTM G 154 Cycle 1	No ICC or ANSI/EIMA Criteria	Color change: 0.51 Delta E after 5000 hours QUV
Freeze-Thaw Resistance	ASTM E 2485 (formerly EIMA 101.01)	ANSI/EIMA 99-A-2001 60 cycles: No deleterious effects[3]	90 cycles: No deleterious effects[3]
	ASTM E 2485 ICC – ES Proc. (AC212)	ICC: 10 cycles No deleterious effect[3]	10 cycles: No deleterious effects[3]
Mildew Resistance	ASTM D 3273	ANSI/EIMA 99-A-2001 28 days: No growth	60 days: No growth
Salt Spray Resistance	ASTM B 117	ICC and ANSI/EIMA 99-A-2001 300 hours: No deleterious effects[3]	1000 hours: No deleterious effects[3]
Water Resistance	ASTM D 2247	ICC and ANSI/EIMA 99-A-2001 14 days: No deleterious effects[3]	42 days: No deleterious effects[3]
Abrasion Resistance	ASTM D 968 Method A Falling Sand	ANSI/EIMA 99-A-2001 528 quarts (500 liters): No deleterious effects[3]	1057 quarts (1000 liters): No deleterious effects[3]
	ASTM D 4060 Taber Abrasion (1 kg load)	No ICC or ANSI/EIMA Criteria	1000 cycles: .83 mg mass loss
Adhesion to Concrete	ASTM D 4541	ICC and ANSI/EIMA 99-A-2001: 15 psi minimum	>200 psi
Tensile Bond	ASTM C 297/E 2134 (formerly EIMA 101.03)	ICC and ANSI/EIMA 99-A-2001: 15 psi minimum	>25 psi

1. Testing referenced is based on Quarzputz Pastel Base.
2. Finish applied over aluminum panels, bent on cylindrical mandrels as described in ASTM D 522 Method B. Lower diameter indicates higher flexibility.
3. No cracking, checking, rusting, crazing, erosion, blistering, peeling, or delamination when viewed under 5x magnification.
4. Delta E is total color difference, including yellowing, lightening, darkening, changes in red, blue, and green color values. Finish exposed to 5,000 hours of QUV prior to evaluating Delta E.

1.06 QUALITY ASSURANCE

A. Qualifications:
1. Manufacturer: Shall be Dryvit Systems, Inc. or approved suppliers. All materials shall be obtained from Dryvit Systems, Inc. or its authorized distributors.
2. Plastering Contractor:
a. Shall be knowledgeable in the proper installation of exterior lathing and cement plaster products.
b. Shall have qualified and properly trained people to perform work.
c. Shall be licensed, bonded and insured.
d. Shall have experience in application of cement plaster products on projects of comparable scope.

B. Mock-Up
1. The contractor shall, before the project commences, provide the owner/architect with a mock-up for approval.
2. The mock-up shall be of suitable size as required to accurately represent each color and texture to be utilized on the project
3. The mock-up shall be prepared with the same products, tools, equipment and techniques required for the actual applications. The finish used shall be from the same batch as that being used for the project.
4. The approved mock-up shall be available and maintained at the job site.

1.07 DELIVERY, STORAGE AND HANDLING

A. All Commercial Cement Plaster 2 materials shall be delivered to the job site in the original, unopened packages with labels intact. Questionable materials shall not be used.
B. Materials shall be stored at the job site, and at all times, in a cool, dry location, out of direct sunlight, protected from weather and other sources of damage. Minimum storage temperature shall be as follows:
1. DPR, PMR™, HDP™, Weatherlastic® and E™ Finishes, Color Prime™, Primus®, Genesis® and NCB™: 40 °F (4 °C).
C. For other products, refer to specific product data sheets.
D. Protect all products from weather and direct sunlight.
E. Maximum storage temperature shall not exceed 100 °F (38 °C). NOTE: Minimize exposure of materials to temperatures over 90 °F (32 °C). Finishes exposed to temperatures over 110 °F (43 °C) for even short periods may exhibit skinning, increased viscosity and should be inspected prior to use.

1.08 PROJECT CONDITIONS
A. Application of wet materials shall not take place during inclement weather unless appropriate protection is provided. Protect materials from inclement weather until they are dry.
B. Dryvit CCP Base shall not be applied when wall or ambient temperatures are below 40 °F (4 °C).
C. At the time of Dryvit product application, the air and wall surface temperatures shall be from 40 °F (4 °C) minimum to 100 °F (38 °C) maximum for the following products:
1. DPR, PMR, HDP, Weatherlastic and E Finishes™, Color Prime, Primus, Genesis and NCB.
2. For other products, refer to specific product data sheets.
D. These temperatures shall be maintained with adequate air ventilation and circulation for a minimum of 24 hours (48 hours for Weatherlastic Finishes, Ameristone, TerraNeo and Lymestone) thereafter, or until the products are completely dry. Refer to published product data sheets for more specific information.
E. CCP Base shall be completely dry and properly cured for a minimum of 7 days prior to primer application.
F. If necessary, tenting, heating and ventilation may be utilized to maintain required conditions. Heaters shall be vented to the outside.
G. Protect the Commercial Cement Plaster 2 materials from uneven and excessive evaporation in dry, warm, or windy weather. Always work the shady side of the wall. Refer to section 3.03.B and 3.03C for CCP Base curing requirements.

1.09 SEQUENCING AND SCHEDULING

A. Installation of the Commercial Cement Plaster 1 shall be coordinated with other construction trades.

1.10 WARRANTY

A. Dryvit Systems, Inc. shall provide a limited warranty against defective material upon written request. Dryvit shall make no other warranties, expressed or implied. Dryvit does not warrant workmanship. Full details are available from Dryvit Systems, Inc.

1.11 DESIGN RESPONSIBILITY

A. It is the responsibility of both the specifier and the purchaser to determine if a product is suitable for their intended use. The designer selected by the purchaser shall be responsible for all decisions pertaining to design, detail, structural capability, attachment details, shop drawings and the like. Dryvit has prepared guidelines in the form of specifications, installation details, and product data sheets to facilitate the design process only. Dryvit is not liable for any errors or omissions in design, detail, structural capability, attachment

details, shop drawings, or the like, whether based upon the information prepared by Dryvit or otherwise, or for any changes which purchasers, specifiers, designers, or their appointed representatives may make to Dryvit's published comments.

1.12 MAINTENANCE

A. All Dryvit products are designed to require minimal maintenance. However, as with all building products, depending on location, some cleaning and minimal maintenance may be required. See Dryvit publication DS152 on Cleaning and Recoating.
B. Sealants and flashings shall be inspected by the owner or their agent on a regular basis and repairs made as necessary to maintain a watertight building enclosure.

PART II - PRODUCTS

2.01 MANUFACTURER:

A. All components of Commercial Cement Plaster 1 shall be obtained from Dryvit or its authorized distributors.

2.02 MATERIALS

A. Paper Backed Metal Lath (by others): Specific type to be selected by designer based on specific project requirements. Paper backing or other slip sheet is required when installed over Backstop® NT™ liquid air/water resistive barrier.
   1. Self-Furring Diamond Mesh metal lath shall be galvanized, minimum 2.5 lbs/sq yd (1.4 kg/m^2) or 3.4 lbs/yd^2 (1.9 kg/m^2) and comply with ASTM C 847.
   2. Self furring welded wire lath, minimum 16 gauge, shall be galvanized with openings not exceeding 2 in x 2 in (51 mm x 51 mm), and comply with ASTM C 933.
   3. 3/8 in (9.5 mm) galvanized rib lath shall comply with ASTM C 847.
   4. Self furring woven wire lath, minimum 17 gauge, shall be galvanized with openings not exceeding 1 1/2 in x 1 1/2 in (38 mm x 38 mm) meeting ASTM C 1032.

B. Accessories (by others).
   1. Type, style and manufacturer shall be indicated on construction documents.
   2. Depth of accessories (grounds) shall be sized for the plaster thickness.

3. In corrosive environments, accessories manufactured of PVC or zinc are recommended.
4. Steel accessories shall meet ASTM C 841.
5. PVC accessories shall meet ASTM D 1784 and ASTM C 1063.

C. Plaster Base Coat:
1. Dryvit CCP Base - Concentrate: A fiberglass reinforced, cement plaster mix utilizing alkali resistant fibers and proprietary cementitious admixtures which is field mixed with clean, graded plaster sand meeting ASTM C 897, water and Dryvit AC-100 activator (when specified). CCP Base - Concentrate is packaged in 80 lb (36.3 kg) bags.

D. Primer:
1. Dryvit Color Prime™, Color Prime-W or Primer with Sand™: A water-based, pigmented acrylic primer applied over the cured Commercial Cement Plaster base coat to improve adhesion and provide a more uniform appearance of the finish.

E. Dryvit Coating:

1. Weatherlastic® Smooth - integrally colored, elastomeric, smooth exterior wall coating enhanced with proven mildew resistance. A minimum of 2 coats are required.

F. Dryvit Finish(es): 100% acrylic finishes with integral color and texture. Shall be the type, color and texture as selected by the architect/owner and shall be of the following types:
1. Standard DPR (Dirt Pickup Resistance): Water-based, acrylic coating with integral color and texture and formulated with DPR chemistry:
a. Quarzputz® DPR: Open-texture
b. Freestyle® DPR: Fine texture
C. Sandpebble® DPR: Pebble texture
D. Sandpebble® Fine DPR: Fine pebble texture
5. Elastomeric DPR (Dirt Pickup Resistance): Water based, elastomeric acrylic coating with integral color and texture and formulated with DPR chemistry:
a. Weatherlastic® Sandpebble

PART III - EXECUTION

3.01 EXAMINATION

A. Prior to installation of Commercial Cement Plaster 1, it is the contractor’s responsibility to ensure that:
1. The surfaces to receive plaster are free of dust, loose particles, oil and other conditions that would affect the adhesion, installation or performance of Commercial Cement Plaster 1 materials.
2. The lath is of the proper type, installed tight, properly fastened, and meets the requirements of ASTM C 1063, ASTM C 847 (expanded metal), ASTM C 933 (Welded Wire), or ASTM C 1032 (Woven Wire), and local building code requirements.
3. All accessories including corner aids, control and expansion joints, casing beads, etc. are properly fastened and positioned according to contract drawings and local building code requirements.
4. The water-resistive barrier (if specified) is of a proper type and has been installed in a weatherboard fashion in accordance with building code and manufacturer’s requirements.
5. Doors, windows, decks, and other openings and penetrations have been properly flashed in accordance with building code and contract documents.
6. Metal roof flashing has been installed in accordance with Asphalt Roofing Manufacturers Association (ARMA) Standards.
7. The substrate is flat within 1/4 in (6.4 mm) in 10 ft (3.0 m).

8. The contractor shall notify the general contractor and/or owner and/or architect of all discrepancies. Do not proceed until unsatisfactory conditions are resolved.

3.02 PREPARATION

A. Protection
1. The Commercial Cement Plaster 1 materials shall be protected by permanent or temporary means from weather and other damage prior to, during, and following application, until dry.
2. Protect adjoining work and property.

B. Solid surfaces such as precast or cast-in-place concrete or masonry, shall have adequate suction and surface roughness to provide bond. Smooth or non-absorptive surfaces shall be prepared by the following methods:

1. Sandblasting, wire brushing, acid etching, chipping or any combination thereof. Refer to ASTM D 4258, ASTM D 4259 ASTM D 4260, or ASTM D 4261 as applicable.
2. Application of an approved bonding agent.
3. Where effective bond cannot be achieved, the entire surface shall be covered with furred metal lath in accordance with ASTM C 1063 and building code requirements.

3.03 INSTALLATION

A. Mixing and Application Instructions – refer to the product literature for specific mixing and application instructions of each product.

B. CCP Base shall be moist cured for a minimum of 48 hours following application.

C. CCP Base shall be completely dry and cured for a minimum of 7 days prior to application of primer and finish.

3.04 FIELD QUALITY CONTROL

A. The lath and water-resistive barrier installation shall be inspected as required by the local building department prior to plaster materials being applied.

B. The contractor shall be responsible for the proper application of the Commercial Cement Plaster 1 materials.

C. Dryvit assumes no responsibility for on-site inspections or application of its products.

3.05 CLEANING

A. All excess Commercial Cement Plaster 1 materials shall be removed from the job site by the contractor in accordance with contract provisions.

B. All surrounding areas, where the Dryvit Commercial Cement Plaster 1 has been applied, shall be left free of debris and foreign substances resulting from the contractor’s work.

3.06 PROTECTION

A. The Commercial Cement Plaster 1 materials shall be protected from weather and other damage until permanent protection in the form of flashings, sealants, etc. are installed.

END OF DOCUMENT

SECTION 09 90 01
PAINTS AND COATINGS

The requirements of the “General Conditions”, the “Supplementary Conditions”, and “Division 1” sections of the Specifications, shall apply to this section of the Specifications.

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes surface preparation, painting, and finishing of exposed interior and exterior items and surfaces.

1. Surface preparation, priming, and finish coats specified in this section are in addition to shop priming and surface treatment specified under other sections.

B. Paint exposed surfaces whether or not colors are designated in "schedules," except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. If color or finish is not designated, the Architect will select from standard colors or finishes available. Sherwin Williams Coatings listed at the end of this specification where used to establish the level of quality of the coating systems. The coating manufacturer shall match the colors identified in the finish schedule.

1. Painting includes field painting exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.

C. Painting is not required on pre-finished items, finished metal surfaces, concealed surfaces, operating parts, and labels.

1. Pre-finished items not to be painted include the following factory-finished components:

a. Acoustic materials.

b. Finished mechanical and electrical equipment.

c. Light fixtures.

d. Switchgear.

e. Distribution cabinets.

f. Plastic laminate wood doors.

g. Wood veneer doors

h. Metal lockers.

i. Plastic laminate covered architectural casework.

j. Wood veneer woodwork and casework.

k. Metal flashings.

l. Curtain wall system.

2. Concealed surfaces not to be painted include wall or ceiling surfaces in the following generally inaccessible areas:

a. Furred areas.

b. Pipe spaces.

c. Ceiling plenums, with the following exception:

3. Finished metal surfaces not to be painted include:

a. Anodized aluminum.

b. Stainless steel.

c. Chromium plate.

d. Copper.

e. Bronze or brass.

4. Operating parts not to be painted include moving parts of operating equipment such as the following:

a. Valve and damper operators.

b. Linkages.

c. Sensing devices.

d. Motor and fan shafts.

5. Labels: Do not paint over Underwriter's Laboratories, Factory Mutual or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

1.02 RELATED SECTIONS: The following items of related Work will be provided under other sections of the Specifications:

A. Section 01 35 45 - Sustainable Design Project Requirements.

B. Section 01 74 19 - Construction Waste Management

C. Section 05 12 00 - Structural Steel Framing: Shop Primed Items.

D. Section 05 21 00 - Steel Joist Framing: Shop Primed Items.

E. Section 05 50 00 - Metal Fabrications: Shop Primed Items.

F Section 05 51 00 - Metal Stairs: Shop Primed, Field Painted.

G. Section 08 12 14 - Standard Steel Frames: Shop Primed, Field Painted.

H. Section 08 13 14 - Standard Steel Doors: Shop Primed, Field Painted.

I. Section 22 05 53 - Identification for Plumbing Piping and Equipment.

J. Section 23 05 53 - Identification for HVAC Piping and Equipment.

K. Section 26 05 53 - Identification for Electrical Systems.

L. Section 27 05 53 - Identification for Communication Systems.

M. Section 05 05 13 - Shop Applied Coatings for Metal

N. Section 06 01 40 - Architectural Woodwork Refinishing

O. Section 06 05 83 - Shop Applied Wood Coatings

P. Section 07 19 00 - Water Repellents.

Q. Section 09 67 00 - Fluid Applied Flooring for Concrete

R. Section 09 93 00 - Stains and Transparent Finishes

S. Section 09 96 00 - High-Performance Coatings

1.03 REFERENCES

A. SSPC-SP 1 - Solvent Cleaning

B. SSPC-SP 2 - Hand Tool Cleaning

C. SSPC-SP 3 - Power Tool Cleaning

D. SSPC-SP 13 / Nace No. 6 Surface Preparation for Concrete

E. EPA-Method 24

F. GS-11, GC-03

1.04 SUBMITTALS

A. General: Submit Shop Drawings and Product Data to the Architect for review in accordance with the requirements in Section 01 33 23 - Shop Drawings and Samples, and as specified herein.

B. Submit, in accordance with, Section 01 33 00 – Submittal Procedures.

C. Product Data: Manufacturer's technical information, label analysis, application instructions and MSDS sheets for each material proposed for use.

1. List each material and cross-reference the specific coating and finish system and application. Identify each material by the manufacturer's catalog number and general classification.

2. Provide Material Safety and Data Sheets on each product specified.

D. Samples: Upon selection of colors by the architect, submit samples for Architect's review of color and texture only. Provide a listing of material and application for each coat of each finish sample.

1. On 12" x 12" hardboard, provide one sample of each paint color listed in the color schedule, with texture to simulate actual conditions. Resubmit samples as requested by Architect until acceptable sheen, color, and texture is achieved. Samples shall be steeped to show primer, first coat, and second coat.

2. On actual wood surfaces, provide two 4" x 8" samples of stained wood finish.

3. On actual wall surfaces and other exterior and interior building components, duplicate painted finishes of prepared samples when requested by Architect. On at least 100 sq. ft. of surface as directed, provide full-coat finish samples until required sheen, color and texture is obtained; simulate finished lighting conditions for review of in-place work.

4. Do not proceed with painting until materials and finishes are approved by Architect.

1.05 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats.

B. Coordination of Work: Review other sections in which primers are provided to ensure compatibility of the total systems for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify the Architect of problems anticipated using the materials specified.

C. Material Quality: Provide the manufacturer's best quality trade sale paint material of the various coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.

1. Proprietary names used to designate colors or materials are not intended to imply that products named are required or to exclude equal products of other manufacturers.

2. Federal Specifications establish a minimum quality level for paint materials, except where other product identification is used. Provide written certification from the manufacturer that materials provided meet or exceed these criteria.

3. Products that comply with qualitative requirements of applicable Federal Specifications, yet differ in quantitative requirements, may be considered for use when acceptable to the Architect. Furnish material data and manufacturer's certificate of performance to Architect for proposed substitutions.

D. Interior coating type: Provide interior painting systems which are VOC compliant as per Green Seal Environmental Standard GS-11 for interior paint VOC thresholds:

1. Non-flat: VOC not more than 50 g/L.

2. Flat: VOC not more than 50 g/L.

E. Interior/Exterior coatings type: Provide interior/exterior coating systems which are VOC compliant as per Rule 1168 of the South Coast Air Quality Management District for coatings, primers, stains:

1. Primers, Sealers and Undercoaters: VOC not more than 200 g/L.

2. Clear Wood Finishes:

a. Varnish: VOC not more than 350 g/L.

b. Sanding Sealers: VOC not more than 350 g/L.

c. Lacquers: VOC not more than 275 g/L.

3. Stains, interior: VOC not more than 250 g/L.

4. Floor coatings: VOC not more than 100 g/L.

F. Exterior coating type: Provide exterior painting systems which are VOC compliant as per Green Seal Environmental Standard GS-11 for exterior paint VOC thresholds:

1. Non-flat: VOC not more than 200 g/L.

2. Flat: VOC not more than 100 g/L.

G. Interior/Exterior anti-corrosive and anti-rust coating types for ferrous metals: Provide interior/exterior painting systems for ferrous metals which are VOC compliant as per Green Seal Environmental Standard GC-03 for interior/exterior paint VOC thresholds:

1. Gloss: VOC not more than 250 g/L.

2. Semi-Gloss: VOC not more than 250 g/L.

3. Flat: VOC not more than 250 g/L.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the job site in the manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:

1. Product name or title of material.

2. Product description (generic classification or binder type).

3. Federal Specification number, if applicable.

4. Manufacturer's stock number and date of manufacture.

5. Contents by volume, for pigment and vehicle constituents.

6. Thinning instructions.

7. Application instructions.

8. Color name and number.

9. VOC content.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.

1. From freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

C. Packaging Waste Management: Separate packaging waste materials for reuse, recycling and/or landfill in accordance with Section 01 74 19 - Construction Waste Management and Disposal.

1.07 JOB CONDITIONS

A. Section 01 60 00 – Product Requirements.

B. Do not apply materials when surface and ambient temperatures are outside temperature ranges required by paint manufacturer.

C. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 deg F (10 deg C) and 90 deg F (32 deg C).

D. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 deg F (7 deg C) and 95 deg F (35 deg C).

E. Do not apply paint in snow, rain, fog, or mist, when the relative humidity exceeds 85 percent, at temperatures less than 5 deg F (3 deg C) above the dew point, or to damp or wet surfaces.

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by the manufacturer during application and drying periods.

F. Provide lighting level of 80 foot candle measured mid-height at substrate surface.

1.08 EXTRA MATERIAL

A. Provide one gallon of each different paint system, and color with manufacturers name and color clearly labeled on the top of each container.

1.09 PRE-PAINTING CONFERENCE

A. Prior to finish painting, exterior and interior, General Contractor shall schedule a "Pre-Painting Conference" to be attended by the Architect, Contractor, Painting Subcontractor and Manufacturer's Representative (Manufacturer's Rep. to attend when required for special finishes.)

B. Agenda to include submittal of color and finishes sample (RE: Article 1.04 "Submittals" and review of color schedule.

C. Contractor to record discussions of conference including agreements and/or disagreements and distribute a copy of record to each party in attendance.

PART 2 - PRODUCTS

2.01 SUBSTITUTION

A. Manufacturers with comparable equivalent products may be acceptable, subject to conformance with these Specifications, the requirements of the Drawings, and the Architect's review. Refer to Specification 01 25 00 – Substitution Procedures.

2.02 MANUFACTURERS

A. Coating Manufacturer:

1. Sherwin-Williams (S-W).

a. Refer to "List of Finishes" located on the drawings for paint colors. Coating manufacturer shall computer match the colors selected.

B. Substitutions are permitted. Coating systems submitted from Benjamin Moore and Co. or Pratt and Lambert shall match the systems including VOC limits and ASTM numbers specified at the end of this section.

C. Color Pigments: Pure, non-fading, applicable types to suit substrates and service indicated.

1. Lead content in pigment, if any, is limited to contain not more than 0.06% lead, as lead metal based on the total non-volatile (dry-film) of paint by weight.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions under which painting will be performed for compliance with requirements for application of paint. Do not begin paint application until unsatisfactory conditions have been corrected.

1. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

B. Refer to Section 01 31 00 – Project Management & Coordination

C. Refer to Section 01 73 00 - Execution

3.02 PREPARATION

A. General Procedures: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items in place that are not to be painted, or provide surface-applied protection prior to surface preparation and painting. Remove these items if necessary for complete painting of the items and adjacent surfaces. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.

1. Clean surfaces before applying paint or surface treatments. Remove oil and grease prior to cleaning. Schedule cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

B. Surface Preparation: Clean and prepare surfaces to be painted in accordance with the manufacturer's instructions for each particular substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove and reprime. Notify Architect in writing of problems anticipated with using the specified finish-coat material with substrates primed by others.

2. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

a. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knob sealer before application of primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

b. Prime, stain, or seal wood to be painted immediately upon delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.

c. When transparent finish is required, backprime with spar varnish.

d. Seal tops, bottoms, and cutouts of wood doors with a heavy coat of varnish or sealer immediately upon delivery.

3. Ferrous Metals: Clean non-galvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with recommendations of the Steel Structures Painting Council.

a. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by the paint manufacturer, and touch up with the same primer as the shop coat.

4. Galvanized Surfaces: Allow to weather a minimum of 6 months prior to coating. Clean per SSPC-SP1 using detergent and water or a degreasing cleaner, then prime as required. When weathering is not possible or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast per SSPC-SP7 as necessary to remove these treatments.

5. Aluminum: Remove all oil, grease, dirt, oxide and other foreign material by solvent cleaning per SSPC-SP1, solvent cleaning.

6. Cementitious Materials: Prepare concrete, concrete masonry block, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

   a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.

   b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's written instructions.

   c. Cementitious materials shall have cured for a minimum of 30 days prior to painting.

   d. Damaged areas shall be repaired using appropriate materials.

7. Drywall: Surface must be clean and dry. All nail or screw heads must be set and spackled. Joints must be taped and covered with joint compound. Spackled fastener heads and tape joints must be sanded smooth and all dust removed prior to painting.

8. Previously coated surfaces: Remove all surface contamination such as oil, grease, loose paint, mill scale, dirt, rust, mold, mildew, mortar efflorescence and scalers. Glossy surfaces of old paint films shall be clean and dull before painting. Clean and dull surface either by washing with an abrasive cleaner, or by washing and sanding. Spot prime bare areas with appropriate primer. Check for compatibility by applying a test patch of the specified system, coating an area of 3 square feet. Allow to dry for one week before testing adhesion as per ASTM

D3359. If coating is incompatible, prepare surface in conformance with ASTM D4259.

C. Materials Preparation: Carefully mix and prepare paint materials in accordance with manufacturer's directions.

1. Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.

2. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and if necessary, strain material before using.

3. Use only thinners approved by the paint manufacturer, and only within recommended limits.

3.03 APPLICATION

A. Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Non-zinc coated architectural metals, steel doors and steel frames shall have all coatings spray applied. Brush application is not acceptable.

B. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

1. Paint colors, surface treatments, and finishes are indicated in "schedules."

2. Provide finish coats that are compatible with primers used.

3. The number of coats and film thickness required is the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Sand between applications where sanding is required to produce an even smooth surface in accordance with the manufacturer's directions.

4. Apply additional coats when undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.

5. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned tube radiation, grilles, and similar components are in place. Extend coatings in these areas as required to maintain the system integrity and provide desired protection.

6. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.

7. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint.

8. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.

9. Finish exterior doors on tops, bottoms, and side edges same as exterior faces.

10. Sand lightly between each succeeding enamel or varnish coat.

C. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pre-treated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. Allow sufficient time between successive coats to permit proper drying. Do not recoat until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure and where application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

D. Minimum Coating Thickness: Apply materials at not less than the manufacturer's recommended spreading rate. Provide a total dry film thickness of the entire system as recommended by the manufacturer.

E. Mechanical and Electrical work: Painting mechanical and electrical work is limited to items exposed in mechanical equipment rooms and in occupied spaces.

F. Prime Coats: Before application of finish coats, apply a prime coat of material as recommended by the manufacturer to material that is required to be painted or finished and has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears to assure a finish coat with no burn through or other defects due to insufficient sealing.

G. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

H. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not in compliance with specified requirements.

I. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

J. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.

1. Provide satin finish for final coats.

K. Stripple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.

L. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.04 CLEANING

A. Cleanup: At the end of each work day, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

B. Upon completion of painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping, using care not to scratch or damage adjacent finished surfaces.

3.05 PROTECTION

A. Protect work of other trades, whether to be painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

B. Provide "wet paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work after completion of painting operations.

1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.06 EXTERIOR PAINT SCHEDULE

A. General: Provide the following paint systems for the various substrates, as indicated:

B. Metals:

1. Ferrous Metal (Anti-Corrosive coating):

a. Sherwin Williams Acrolon 218 HS Polyurethane: 1 finish coat over primer on properly prepared surface:

b. Primer:

1) Sherwin-Williams Macropoxy 646 – One coat over prepared-cleaned surfaces

3. Stucco Surfaces and EIFS Substrates:

a. Primer:

1) Sherwin-Williams Loxon Concrete and Masonry Primer A24W8300 VOC: 97 g/L.

b. First and Second Coats:

1) Sherwin-Williams ConFlex XL High Build Elastomeric A05-450 Series (13.0 - 16.0 mils wet, 6.0 - 7.5 mils dry per coat)

4. Bollards

a. Primer:

1) Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer B66W300 VOC: 97 g/L.

b. First and Second Coats:

1) Sherwin-Williams Pro Industrial Urethane Alkyd (Safety Yellow) B54-150 Series

5. Parking Striping/Curb Ramps

a. One Coat:

1) Sherwin-Williams Set Fast Acrylic Traffic Marking Paint (Yellow)

3.07 CONSTRUCTION WASTE

A. Comply with Construction Waste for management for reuse, salvage or recycle non-hazardous waste material.

3.09 CLEAN-UP

A. Waste Management: Collect field generated construction waste created during construction or final cleaning.

END OF SECTION

SECTION 10 14 00
SIGNAGE

The requirements of the “General Conditions”, the “Supplementary Conditions”, and “Division 1” sections of the Specifications, shall apply to this section of the Specifications.

PART 1 - GENERAL

1.01 SCOPE

A. Work Included: Provide all labor, materials, equipment, apparatus, tools, transportation, protection and services necessary for, and reasonably incidental to the proper execution and completion of all Signage Work, as indicated on the Drawings and specified herein. Work includes, but is not necessarily limited to the following:

1. Building Identification Signage.

2. Entrances Signage.

3. Barrier Free Signs.

B. Related Sections: The following items of related Work will be provided under other sections of the Specifications, as indicated:

1. Cast-In-Place Concrete Work - Section 03 30 00.

2. Unit Structural Masonry - Section 04 23 00.

3. Finish Carpentry - Section 06 20 00.

4. Aluminum Framed Entrance and Storefronts - Section 08 41 13.

6. Paints and Coatings - Section 09 90 00.

7. Toilet Compartments - Section 10 21 13.

1.02 REFERENCE SPECIFICATIONS, CODES, AND APPLICABLE STANDARDS

A. Requirements of Regulatory Agencies: Furnish all signs in accordance with the laws, codes, ordinances and regulations of the public authorities having jurisdiction, including Title III of The Americans with Disabilities Act (ADA), Public Law 101-336.

1.03 QUALITY ASSURANCE

A. General: All materials, articles, accessories incorporated in the Work shall be type and quality specified herein, and subject to the Architect’s review. Methods of preparation, construction and installation of such materials, articles and accessories shall be strictly in

accordance with the accepted standard practices, manufacturer's printed specifications and/or instructions, the Architect's Drawings and Specifications, and as directed by the Architect.

B. Single Source Responsibility: For each separate type of sign required, obtain signs from one source from a single manufacturer.

C. Design Criteria: The Drawings indicate size, profiles, dimensional requirements and graphics layout of signs and are based on the specific type and/or model indicated. Signs by other manufacturers may be considered provided that deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.

1.04 SUBMITTALS

A. Reports: Submit test reports, procedure specifications and certifications as required to substantiate welded connections design and welding qualifications to the Owner's Representative and the General Contractor for review.

B. General: Submit Shop Drawings, Product Data, and Samples to the Architect for review in accordance with the requirements in Section 01 33 23 - Shop Drawings and Samples, and as specified herein.

C. Shop Drawings: Prepare and submit fully detailed drawings of all items specified herein.

D. Product Data: Include manufacturer's construction details relative to materials, dimensions of individual components, profiles, and finishes for each type of sign required.

E. Samples: Submit 4" x 4" color Samples on materials to be used for fabrication. Written approval shall be secured from the Architect. Installed materials shall match approved Samples.

1.05 MATERIAL DELIVERY AND STORAGE

A. Delivery: Deliver only acceptable materials to the site in original boxes, and wrappings, clearly labeled with all pertinent information to facilitate checking.

B. Storage: Materials shall be stored at the site off the ground and in properly protected dry storage facilities, until ready for use. Damaged materials will not be acceptable, and shall be removed from the site.

C. Packaging Waste Management: Separate packaging waste materials for reuse, recycling and/or landfill.

1.06 WARRANTY

A. Form of Warranty: Execute a warranty in the approved written form warranting all materials and workmanship to remain in serviceable and satisfactory condition, and to make good at own expense any imperfections which may develop during the warranty period, and damage to other Work caused by imperfections or by repairing imperfections. The warranty period shall be not less than one (1) year from date of Owner's acceptance.

PART 2 - PRODUCTS

2.01 Substitutions: Manufacturers with comparable equivalent products may be acceptable, subject to conformance with these Specifications, the requirements of the Drawings, and the Architect's review. Refer to Specification 01 25 00 – Substitution Procedures.

2.02 BUILDING IDENTIFICATION SIGNAGE

A. Manufacturer: Signage specified herein shall be as manufactured by Allen Markings, 1130 Elmwood Avenue, Kansas City, MO 64127, (816)842-0963, (800)825-0150; www.allendiv.com, or other comparable manufacturer and equivalent product subject to review by the Architect.

B. General: Provide complete and coordinated signage with maximum flexibility and use of manufacturer's standards. Design effect shall maintain overall continuity of color, letter style, and shape as specified herein.

C. Graphic System: Allenite-Architectural Sign Systems, "System 1700 - Vinyl Lettered Signs & Vinyl Letters", computer-cut, pressure sensitive and pre-spaced strips. System shall be forward or reverse cut as selected by the Architect.

1. Sign Address Numbers or Letters: 4" high (unless otherwise directed by local authorities), "Helvetica Medium" Style.

2. Colors: As selected by Owner and to comply with the Texas Accessibility Standards.

3. Mounting: Pressure sensitive material with manufacturer's adhesive.

4. Address Numbers: Suitable for mounting above building's aluminum front entrance doors.

D. Exterior Signs Required: Sign titles and quantities include, but are not necessarily limited to the following.

1. Building Fronts: Addresses as required by the Fire Marshall.
2. Monument Sign: Refer drawings.
3. As noted on the drawings.

2.03 BARRIER FREE SIGNS

A. Manufacturer: Signage specified herein shall be as manufactured by Seton Identification Products, 20 Thompson Road, P.O. Box 819, Branford, CT 06405-0819, (800)571-2596 or (203)488-8059; www.seton.com.

B. Comparable Products: Comparable equivalent signage by the following company, or other comparable manufacturer's product may be acceptable, subject to conformance with these Specifications and the Architect's review.

1. Allen Markings, 1130 Elmwwod Avenue, Kansas City, MO 64127, (816)842-0963 or (800)825-0150; www.allendiv.com.

C. Decal Signs: Barrier free signs at toilet partitions designated for individuals with a disability shall be Seton "Handicap Symbol Decal", Item #35839, tear-resistant, self-adhesive vinyl single sided decal.

1. Graphics: International Symbol Accessibility sign shall have contrasting blue background and white graphics, with matte non-glare finish.

2. Size: 4" x 4".

2.04 VINYL LETTERED SIGNAGE

A. Manufacturer: Allen Markings, 1130 Elmwood Avenue, Kansas City, MO 64127, (816)842-0963, (800)825-0150; www.allendiv.com, or other comparable manufacturer and equivalent products subject to review by the Architect.
- Refer Interior Elevations for additional vinyl signage to be applied at the front door for Hours of Operation, Drop and Pick-up at Pharmacy, etc.

B. Graphic System: Allenite-Architectural Sign Systems, "System 1700 - Vinyl Lettered Signs & Vinyl Letters", computer-cut, pressure sensitive adhesive and pre-spaced strips.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Refer to Section 01 31 00 – Project Management & Coordination

B. Refer to Section 01 73 00 - Execution

3.02 INSTALLATION

A. General: Furnish and install products as shown on the Drawings and specified herein. Special attention shall be given to, but not necessarily limited to the following:

1. Exterior Building Identification Signage: Install signs as indicated and/or shown on the Drawings.

2. General Area Sign: Install signs in locations as directed by Tenant.

3. Vinyl Lettered Signage: Install numbers and letters in locations as directed by Tenant.

B. Accessory Materials: Provide all accessory materials required and necessary for complete and finished installations.

C. ADA Accessibility Guidelines: Signage required to be with accessible designation shall comply with “Mounting Location and Height” specified within the provisions of Article 4.30 of the ADA Accessibility Guidelines.

D. Protection: Protective covers provided by the manufacturer to protect the finishes shall not be removed until final cleaning.

3.03 CLEAN-UP

A. Waste Management: Collect field generated construction waste created during construction or final cleaning.

END OF SECTION

SECTION 32 14 00
UNIT PAVERS

PART 1 – GENERAL

1.1 SECTION INCLUDES:

A. Furnish all labor, material, equipment, related services and supervision necessary for or incidental to the manufacturing, fabrication, and installation for concrete unit pavers as required for the complete performance of the work as shown on the Drawings and/or as specified.

1.2 RELATED DOCUMENTS:

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

B. All other Divisions of the Contract Documents. Refer to each Division's specifications and drawings for all requirements, including but not limited to the following:

1.3 SUBMITTALS

A. Concrete unit paver manufacturer's paver layout, pattern, color arrangement, relationship of paver joints to fixtures, product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.

B. Sieve analysis per ASTM C136 for grading and joints sand.

C. Representative full-size sample of each paver type, thickness, color, and finish that indicate the range of color variation and texture expected in the finished installation. Colors will be selected by the Engineer/Architect from manufacturer's available colors.

D. Substitutions: To be considered for approval, substitutions to this Section must be submitted to the Engineer/Architect seven Calendar (7) days Prior to the bid opening date for review. Submission of an alternate material does not assure acceptance. The submission must clearly state that the submitted material meets the conditions of this Section.

1.4 Sampling and testing Requirements:

A. Manufacturer shall provide access to lots ready for delivery to the Owner or his authorized representative for testing in accordance with ASTM 936-82 for sampling of material prior to commencement of paver placement
B. Manufacturer shall provide a minimum of two (2) years of testing backup data showing manufactured products that meet and exceed ASTM 936-82 when tested in compliance with ASTM C-140.

C. Sampling shall be random with a minimum of three (3) specimens per 10,000 sq. ft. per product shape and size with repeated samples taken every additional 10,000 sq. ft. or a fraction thereof.

D. Test units in accordance with ASTM for compressive strength, absorption and dimensional tolerance. A minimum of three (3) specimens per test required for an average value. Testing of full units is preferred.

E. The expense of testing shall be the responsibility of the Owner.

F. In the event the shipment fails to conform to the specified requirements, the manufacturer may sort it, and new test units shall be selected at random by the Owner from the retained lot and tested at the expense of the Contractor. If the second set of test units fails to conform to the specified requirements, the entire lot shall be rejected.

1.5 Quality Assurance:

A. Acceptable Manufacturer shall be a firm engaged in the manufacture of concrete pavers of types and sizes required and whose products have been in satisfactory use in similar service for a minimum of 2 years.

B. Installer Shall be a firm that shall have a minimum 2 years of successful installation experience with projects utilizing concrete pavers similar in type and scope to that required for this Project.

Part 2 - Products:

2.1 Concrete Paver Manufacturers:

A. Acceptable Concrete Paver Manufacturers: Subject to compliance with requirements indicated, provide products of one of the following:

1. Innovative Block of South Texas, La Feria, Texas (956)-797-4200

2.2 Concrete Paver

A. Pavers: model, size and color as indicated on Drawings.

B. Pavers shall meet the following guidelines and requirements set in the ASTM C936, Standard Specification for Interlocking Concrete Paving Units.

1. Average Compressive Strength 8000 psi (55 MPa) with no individual unit under (7200 psi) 50MPa.
2. Average absorption of 5% with no individual unit greater than 7% when tested in accordance with ASTM C 140.

C. Pigment in concrete paver shall conform to ASTM C979.

D. Local Sourcing Rule:

1. Local sourcing of construction materials is required, whenever reasonably possible. Sourcing outside of a 100 mile radius requires written approval by architect to ensure reasonable justification.