CONTRACT DOCUMENTS
FOR

VETERANS MEMORIAL PARK
Locker Room Renovations

Monday, May 23, 2011

ITB 4158

PARKS AND RECREATION SERVICES
Administering Department

CITY OF ANN ARBOR
100 North Fifth Avenue
Ann Arbor, Michigan 48104

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ADVERTISEMENT FOR
~~PARKING LOT AND TENNIS COURT PAVING~~ AT VETERANS MEMORIAL PARK
CITY OF ANN ARBOR, MICHIGAN

BID NO. 4158

Sealed Bids that include an original bid document and one additional proposal section copy will be received by the **Procurement Office, Finance Services, located on the 5th floor of the Guy Larcom Municipal Building, Ann Arbor, Michigan on or before 2:00 p.m., Monday, May 23, 2010** local time for the renovation of locker rooms at Veterans Memorial Park and all associated work as specified and detailed. Bids will be publicly opened and read aloud at this time. Prospective submitters are responsible for timely receipt of their proposal. Late proposals will not be considered.

Work to be done includes demolition of lockers, flooring, sinks, toilet fixtures, counters, and lighting, and installation of new rubber athletic flooring, toilets, sinks and counters, lighting, lockers, lighting, ventilation, barrier free shower stall, partitions and painting.

Bid documents entirely downloadable on the Michigan Governmental Trade/BidNet (MITN) website at www.govbids.org and on the Purchasing page of the City of Ann Arbor's website at www.a2gov.org on or after or after May 2, 2011. The City will not be distributing paper copies of the plan or specifications.

Each proposal shall be accompanied by a certified check, or Bid Bond by a recognized surety, in the amount of 5% of the total of the bid price. A proposal, once submitted, becomes the property of the City. In the sole discretion of the City, the City reserves the right to allow a bidder to reclaim submitted documents provided the documents are requested and retrieved no later than 48 hours prior to the scheduled bid opening.

The successful Bidder will be required to furnish satisfactory performance and labor and material bonds in the amount of 100% of the bid price and satisfactory insurance coverage.

Precondition for entering into a contract with the City of Ann Arbor is compliance with Chapter 112 of Title IX of the Code of the City of Ann Arbor. The successful Bidder may also be required to comply with Chapter 23 of Title I of the Code of the City of Ann Arbor. Further information is outlined in the contract documents.

After the time of opening, no Bid may be withdrawn for a period of 45 days. The City reserves the right to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

Any further information on bid documents may be obtained from the Procurement Office, (734) 794-6500 ext.42506.

CITY OF ANN ARBOR, MICHIGAN

City of Ann Arbor
LIVING WAGE ORDINANCE
DECLARATION OF COMPLIANCE

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that employers providing services to the City or recipients of grants for financial assistance (in amounts greater than $10,000 in a twelve-month period of time) pay their employees who are working on the City project or grant, a minimum level of compensation known as the **Living Wage**. This wage must be paid to the employees for the length of the contract/project.

Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from the Ordinance. If this exemption applies to your firm, please check below:

_____ This company is exempt due to the fact that we employ or contract with fewer than 5 individuals.

_____ This **non-profit agency** is exempt due to the fact that we employ or contract with fewer than 10 employees.

The Ordinance requires that all contractors/vendors and/or grantees agree to the following terms:

a) To pay each of its employees performing work on any covered contract or grant with the City, no less than the living wage, which is defined as $11.83/hour when health care is provided, or no less than $13.19/hour for those employers that do *not* provide health care. It is understood that the Living Wage will be adjusted upward each year on April 30, and covered employers will be required to pay the adjusted amount thereafter. The rates stated above include the adjustment for 2011/12.

b) Please check the boxes below which apply to your workforce:

☐ Employees who are assigned to *any covered* City project or grant will be paid at or above the applicable living wage without health benefits Yes_____ No_____

OR

Employees who are assigned to *any covered* City project or grant will be paid at or above the applicable living wage with health benefits Yes_____ No_____

c) To post a notice approved by the City regarding the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.

d) To provide the City payroll records or other documentation as requested; and,

e) To permit access to work sites to City representatives for the purposes of monitoring compliance, investigating complaints or non-compliance.

The undersigned authorized representative hereby obligates the contractor/vendor or grantee to the above stated conditions under penalty of perjury and violation of the Ordinance.

Company Name

Address City State Zip

Signature of Authorized Representative

Phone (area code)

Type or Print Name and Title

Email address

Date signed

Questions about this form? Please contact:
Procurement Office City of Ann Arbor - 734/794-6500 fax: 734/994-1795

→ New rate effective May 1, 2011←

$11.83 per hour
if the employer provides health care benefits*****

$13.19 per hour
if the employer does ***NOT*** provide health care benefits*****

Employers providing services to or for the City of Ann Arbor or recipients of grants or financial assistance from the City of Ann Arbor for a value of more than$10,000 in a twelve-month period of time ***must pay those employees performing work on a City of Ann Arbor contract or grant, the above living wage.***

ENFORCEMENT

The City of Ann Arbor may recover back wages either administratively or through court action for the employees that have been underpaid in violation of the law. Persons denied payment of the living wage have the right to bring a civil action for damages in addition to any action taken by the City.

Violations of this Ordinance is punishable by fines of not more than $500/violation plus costs, with each day being considered a separate violation. Additionally, the City of Ann Arbor has the right to modify, terminate, cancel or suspend a contract in the event of a violation of the Ordinance.

For Additional Information or to File a Complaint Contact:

Dee Lumpkin, Procurement Assistant

734/794-6576 or dlumpkin@a2gov.org

*****

Health Care benefits includes those paid for by the employer or making an employer contribution toward the purchase of health care. The employee contribution must not exceed $.50 an hour for an average work week; and the employer cost or contribution must equal no less than $1/hr for the average work week.

The law requires employers to display this poster where employees can readily see it.

CITY OF ANN ARBOR HUMAN RIGHTS OFFICE ***Form #1***

CONTRACT COMPLIANCE FORM

Entire Organization (Totals for All Locations where applicable)

Name of Company/Organization_____Date Form Completed_____

Name and Title of Person Completing this Form_____\Name of President _____

Address_____County_____ Phone #_____
(Street address) (City) (State) (Zip) (Area Code)

Fax#_____Email Address_____
(Area Code)

EMPLOYMENT DATA

Job Categories	Number of Employees												
	Male						Female						
	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other	American Indian or Alaska Native	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other Pacific	American Indian or Alaskan	TOTAL COLUMNS A-M
	A	B	C	D	F	G	H	I	J	K	L	M	
Exec/Sr. Level Officials													
Supervisors													
Professionals													
Technicians													
Sales													
Admin. Support													
Craftspeople													
Operatives													
Service Workers													
Laborers/Helper													
Apprentices													
Other													
TOTAL													
PREVIOUS YEAR TOTAL													

9/03

Questions about this form? Call 734/794-6576

CITY OF ANN ARBOR HUMAN RIGHTS OFFICE **Form #2**

CONTRACT COMPLIANCE FORM

Local Office (Only those employees that will do local or on-site work, if applicable)

Name of Company/Organization_____Date Form Completed_____

Name and Title of Person Completing this Form_____

Fax#_____Email Address_____
(Area Code)

EMPLOYMENT DATA

Job Categories	***Number of Employees***												
	Male						***Female***						
	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other Pacific	American Indian or Alaska Native	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other Pacific	American Indian or Alaskan Native	**TOTAL COLUMNS A-M**
	A	**B**	**C**	**D**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	
Exec/Sr. Level Officials													
Supervisors													
Professionals													
Technicians													
Sales													
Admin. Support													
Craftspeople													
Operatives													
Service Workers													
Laborers/Helper													
Apprentices													
Other													
TOTAL													
PREVIOUS YEAR TOTAL													

9/03

Questions about this form? Call 734/794-6576

- Effective February 1, 2010-

CITY OF ANN ARBOR RESOLUTION R-09-459
CUB AGREEMENT REQUIREMENT

NOTICE TO ALL CONTRACTORS AND SUBCONTRACTORS PERFORMING CONSTRUCTION WORK FOR THE CITY OF ANN ARBOR ON ANY CITY CONSTRUCTION PROJECT

Any labor used on a City construction project bid and awarded by the City of Ann Arbor must be governed by the current collective bargaining agreement of the appropriate Local Unions of the Washtenaw County Skilled Building Trades Council (SBTC).

All invitations to bid on construction contracts include, as a condition of award, the requirement that all contractors and subcontractors execute a CUB agreement with the SBTC. Each contractor and subcontractor at all tiers of a project shall, prior to beginning work on the project, become signatory parties to the respective current collective bargaining agreements of the appropriate Local Unions of the SBTC. Alternately, when no other agreement exists, a Contractor may sign a one-time project agreement for the CUB project, covering that construction project only.

All potential bidders and contractors must contact the current CUB representative, Bart Nickerson at 734-944-5317 (office) or 734-320-2227 (cell) for a complete summary of the procedures and requirements pursuant to the CUB Memorandum of Understanding

CONTRACTORS SHALL DISPLAY THIS NOTICE WHERE EMPLOYEES CAN READILY SEE IT.

Questions Contact
D. Lumpkin, Procurement Assistant
dlumpkin@a2gov.org

NOTICE OF PRE-BID CONFERENCE

A pre-bid conference for this project will be held on **Monday, May 9, 2011 at 10 AM** at the Veterans Memorial Park Facility, located at 2150 Jackson Ave, Ann Arbor, Michigan. It is highly recommended that potential bidders visit each site to familiarize themselves with existing conditions and review the contract documents for project scope elements.

Attendance at this conference is optional, but highly recommended. Administrative and technical questions regarding this project may be discussed at this time. If any questions arise whose answers constitute modifications to the bid documents, an addendum will be issued.

INSTRUCTIONS TO BIDDERS

General

Work to be done under this Contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents. All work to be done under this Contract is located in or near the City of Ann Arbor.

The City shall make available to all prospective Bidders, prior to receipt of the Bids, access to the area in which the work is to be performed. Advance notice should be given to the Administering Department in cases where access to the site must be arranged by the City.

Any proposal which does not fully conform with these instructions may be rejected.

Proposals

Proposals must be submitted on the "Proposal Forms" and "Bid Forms" provided, with each blank properly filled in. **Sealed Bids that include a complete original bid document and one additional proposal section copy must be received** by the City of Ann Arbor Procurement Office, Fifth Floor, City Hall, Ann Arbor, Michigan, at the time stipulated in the Advertisement, which promptly thereafter proposals will be publicly opened and read aloud. Each proposal must be enclosed in a sealed envelope, endorsed across one end:

BID #4158, Proposal for Locker Room Renovations at VETERANS MEMORIAL PARK

The City intends to award a Contract(s) to the lowest responsible Bidder(s). On multi-divisional contracts, separate divisions may be awarded to separate Bidders. The City may also utilize discounts offered in the Bid Forms, if any, to determine the lowest responsible Bidder on each division, and award multiple divisions to a single Bidder, so that the lowest total cost is achieved for the City. For unit price bids, the contract will be awarded based upon the lump sum and unit prices stated by the bidder for the work items specified in the bid documents, with consideration given to any alternates selected by the City. If the City determines that the unit price for any item is materially different for the work item bid than either other bidders or the general market, the City, in its sole discretion, in addition to any other right it may have, may reject the bid as not responsible or non-conforming.

The acceptability of major subcontractors will be considered in determining if a Bidder is responsible. In comparing proposals, the City will give consideration to alternate proposals for items listed in the forms, or other alternates which the Bidder may wish to submit, but preference will be given to Base Bid Proposals.

The City reserves the right to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

Bid Security

Each proposal must be accompanied by a certified check, or Bid Bond by a surety licensed and authorized to do business within the State of Michigan, in the amount of 5% of the total of the bid price.

Withdrawal of Bids

After the time of opening, no Bid may be withdrawn for the period of days specified in the Advertisement.

Contract Time

Time is of the essence in the performance of the work under this Contract. The available time for work under this Contract is indicated on page C-1, Article III of the Contract. If these time requirements can not be met, the Bidder must stipulate on Bid Form Section 3 - Time Alternate its schedule for performance of the work. Consideration will be given to time in evaluating bids. It should be noted that the proposed work cannot begin before July 1, 2008 and will be scheduled around the completion of a restroom building installation under separate contract.

Liquidated Damages

A liquidated damages clause, as given on page C-2, Article III of the Contract, provides that the Contractor shall pay the City as liquidated damages, and not as a penalty, a sum certain per day for each and every day that the Contractor may be in default of completion of the specified work, within the time(s) stated in the Contract, or written extensions.

Liquidated damages clauses, as given in the General Conditions, provide further that the City shall be entitled to impose and recover liquidated damages for breach of the obligations under Chapter 112 of the City Code.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Human Rights Information

Section 5, beginning at page GC-3, outlines the requirements for fair employment practices under City of Ann Arbor Contracts. To establish compliance with this Ordinance, the Bidder must complete and return with its bid completed copies of the two pages of Human Rights Division Contract Compliance Forms (copy attached) or an acceptable equivalent.

Wage Requirements

Section 4, beginning at page GC-1, outlines the requirements for payment of prevailing wages or of a living wage to employees providing service to the City under this contract. In addition Section 4 outlines the requirement for execution of a CUB Agreement with the Washtenaw County Skilled Trades Council (SBTC). The successful bidder must comply with all applicable requirements and may be required to provide documentary proof of compliance when requested.

Major Subcontractors

The Bidder shall identify each major subcontractor it expects to engage for this Contract if the work to be subcontracted is 15% or more of the bid sum or over $50,000, whichever is less. The Bidder also shall identify the work to be subcontracted to each major subcontractor.

PROPOSAL

City of Ann Arbor
Guy C. Larcom Municipal Building
Ann Arbor, Michigan 48107

Ladies and Gentlemen:

The undersigned, as Bidder, declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that this Bidder has carefully read and examined the bid documents, including Advertisement, Human Rights Division Contract Compliance Forms, Notice of Pre-Bid Conference, Instructions to Bidders, Proposal, Bid Forms, Contract, Bond Forms, General Conditions, Standard Specifications, Detailed Specifications, all Addenda, and the Plans and understands them. The Bidder declares that it conducted a full investigation at the site and of the work proposed and is fully informed as to the nature of the work and the conditions relating to the work's performance. The Bidder also declares that it has extensive experience in successfully completing projects similar to this one.

The Bidder acknowledges that it has not received or relied upon any representations or warrants of any nature whatsoever from the City of Ann Arbor, its agents or employees, and that this Bid is based solely upon the Bidder's own independent business judgment.

The undersigned proposes to perform all work shown on the plans or described in the bid documents, including any addenda issued, and to furnish all necessary machinery, tools, apparatus, and other means of construction to do all the work, furnish all the materials, and complete the work in strict accordance with all terms of the Contract of which this proposal is one part.

In accordance with these bid documents, and Addenda numbered _____, the undersigned, as Bidder, proposes to perform at the sites in and/or around Ann Arbor, Michigan, all the work included herein for the amounts set forth in the Bid Forms.

The Bidder declares that it has become fully familiar with the liquidated damage clauses for completion times and for compliance with City Code Chapter 112, understands and agrees that the liquidated damages are for the non-quantifiable aspects of non-compliance and do not cover actual damages that may be shown and agrees that if awarded the Contract, all liquidated damage clauses form part of the Contract.

The Bidder declares that it has become fully familiar with the provisions of Chapter 14, Section 1:319 (Prevailing wages) and Chapter 23 (Living Wage) of the Code of the City of Ann Arbor and that it understands and agrees to comply, to the extent applicable to employees providing services to the City under this Contract, with the wage and reporting requirements stated in the City Code provisions cited. Bidder further agrees that the cited provisions of Chapter 14 and Chapter 23 form a part of this Contract.

The Bidder encloses a certified check or Bid Bond in the amount of 5% of the total of the Bid Price.

The Bidder agrees both to contract for the work and to furnish the necessary Bonds and insurance documentation within 10 days after being notified of the acceptance of the Bid.

If this Bid is accepted by the City and the Bidder fails to contract and furnish the required Bonds and insurance documentation within 10 days after being notified of the acceptance of this Bid, then the Bidder shall be considered to have abandoned the Contract and the certified check or Bid Bond accompanying this Proposal shall become due and payable to the City.

If the Bidder enters into the Contract in accordance with this Proposal, or if this Proposal is rejected, then the accompanying check or Bid Bond shall be returned to the Bidder.

In submitting this Bid, it is understood that the right is reserved by the City to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

SIGNED THIS _____ DAY OF _____, 2011.

_____
Bidder's/Contractor Name

_____ _____
Official Address Authorized Signature of Bidder

_____ _____
Telephone Number (Print Name of Signer Above)

LEGAL STATUS OF BIDDER

(The Bidder shall fill out the appropriate form and strike out the other two.)

Bidder declares that it is:

* A corporation organized and doing business under the laws of the state of_____, for whom _____, bearing the office title of_____, whose signature is affixed to this proposal is authorized to execute contracts.

* A partnership, list all members and the street and mailing address of each:

Also identify the County and State where partnership papers are filed:

County of _____, State of

* An individual, whose signature with address, is affixed to this proposal:_____
(initial here)

Parks&Recreation
CITY OF ANN ARBOR

BID FORM

NAME OF BIDDER _____

STREET ADDRESS _____

CITY, STATE, ZIP _____

TEL/FAX NO. _____ _____ **E-mail:** _____

We, the undersigned, will furnish all labor, materials, equipment, services, facilities and all other items required for the **Veterans Memorial Park Locker Room Renovation** as defined by the Drawings and Specifications prepared by Mitchell and Mouat Architects, Inc. and as identified by the City of Ann Arbor as **Bid No. 4158** for the **Base Bid** amount of:

_____ DOLLARS ($ _____)

BONDS

A **Bid Bond** (5% of bid amount) in the amount of $_____ has **been attached** and forms part of this proposal. The method selected by the Bidder for the Bid Bond will be _____.

A **Performance, Material and Labor Bond** will be furnished as indicated in the Invitation to Bid. The premium for the assurance of this project will be $_____, and is part of the lump sum above.

ADDENDA

We acknowledge receipt of the following Addenda that are included in our bid:

Addendum No._____ , Dated _____ Addendum No._____ , Dated _____

Addendum No._____ , Dated _____ Addendum No._____ , Dated _____

PREPARATION OF BIDS

Proposals shall be based upon these Instructions, the General and Supplemental Conditions (if applicable) and the General Requirements (if applicable) as Part of the Construction Documents.

WORK AND OCCUPANCY COORDINATION: Initial:_____

We have reviewed and, by initialing below, indicate that we will fully comply with the requirements of "Occupancy By Contractor and Owner", Paragraph 2.02 of Specification Section 01010, Summary of the Work, pertaining to work and occupancy coordination.

CHANGES TO WORK: Initial:_____

For additions or deletions to work performed upon the authorization of Owner, Bidder agrees to accept the following fees:

1. For work performed by our own forces, an add/deduct of 15% of cost/credit will be included.
2. For work performed by subcontractors, an add/deduct of 7.5% of cost/credit will be included.

TIME OF COMPLETION: Initial:_____

If awarded the Contract, we agree to complete the work described in the Contract Documents commencing on September 6, 2011 and completed by September 20, 2011, based on straight time performance of work.

PROPOSAL GUARANTEE

The price stated in this Proposal is guaranteed for a period of not less than forty-five (45) days, and, if authorized to proceed within that period, we agree to complete the work covered by this proposal at said price.

ALTERNATES:

Refer to **Section 00920 – ALTERNATES** to be attached to this Bid Form.

INFORMATION REQUIRED

Bidder to state if individual, partnership, or corporation: _____

1. If partnership, list names of all partners:

   _____

   _____

2. If corporation:

   (A) Give state of incorporation: _____

   (B) Give states in which qualified to do business: _____

_____ _____
NAME OF BIDDER **SIGNED BY**

_____ _____
TITLE **DATE**

_____
HOME OFFICE ADDRESS OF BIDDER

Please enclose two (2) copies of this Form as your Bid. Attach copies of Specification Sections 00920 and 00930.

END OF SECTION 00300

Section 2 - Material and Equipment Alternates

The Base Bid proposal price shall include materials and equipment selected from the designated items and manufacturers listed in the bidding documents. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

If the Contractor wishes to quote alternate items for consideration by the City, it may do so under this Section. A complete description of the item and the proposed price differential must be provided. Unless approved at the time of award, substitutions where items are specifically named will be considered only as a negotiated change in Contract Sum.

Item Number	Description	Add/Deduct Amount

If the Bidder does not suggest any material or equipment alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any material or equipment alternate under the contract.

Signature of Authorized Representative of Bidder

BID FORM

Section 3 - Time Alternate

If the Bidder takes exception to the time stipulated in Article III of the Contract, Time of Completion, page C-1, it is requested to stipulate below its proposed time for performance of the work. Consideration will be given to time in evaluating bids.

If the Bidder does not suggest any time alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any time alternate under the contract.

Signature of Authorized Representative of Bidder

BID FORM

Section 4 - Major Subcontractors

For purposes of this contract, a Subcontractor is anyone (other than the Contractor) who performs work (other than or in addition to the furnishing of materials, plans or equipment) at or about the construction site, directly or indirectly for or on behalf of the Contractor (and whether or not in privity of contract with the Contractor), but shall not include any individual who furnishes merely the individual's own personal labor or services.

For the work outlined in these documents the Bidder expects to engage the following major subcontractors to perform the work identified:

Subcontractor (Name and Address)	Work	Amount

If the Bidder does not expect to engage any major subcontractor, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT expect to engage any major subcontractor to perform work under the contract.

Signature of Authorized Representative of Bidder

CONTRACT

THIS AGREEMENT is made on the ____ day of _____, 2011, between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 100 N. Fifth Avenue, Ann Arbor, Michigan 48104 ("City") and_____

Based upon the mutual promises below, the Contractor and the City agree as follows:

ARTICLE I - Scope of Work

The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the project titled "LOCKER ROOM RENOVATIONS AT VETERANS MEMORIAL PARK" in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, which are incorporated as part of this Contract:

Human Rights Division Contract Compliance Forms
Living Wage Declaration of Compliance Forms (if applicable)
CUB Agreement (if applicable)
Bid Forms
Proposal
Contract and Exhibits
Bonds
General Conditions
Standard Specifications
Detailed Specifications
Plans
Addenda

ARTICLE II - Definitions

Administering Service area means Parks and Recreation Services

Supervising Professional means Sumedh Bahl or other persons acting under the authorization of the Director of the Administering Department.

Project means Locker room renovations at Veterans Memorial Park, ITB #4158

ARTICLE III - Time of Completion

(A) The work to be completed under this Contract shall begin immediately after the Contractor's receipt of a fully executed Contract.

(B) The entire construction project for this Contract shall be completed between September 6, 2011 and September 20, 2011.

(C) Failure to complete all the work within the time specified above, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the City, as liquidated damages and not as a penalty, an amount

equal to **$400.00** for each calendar day of delay in the completion of all the work. If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

As an independent requirement, where the Detailed Specifications identify certain portions of the work to be completed within a shorter period of time and the Contractor fails to complete each portion within the shorter period specified for each portion, including any extension granted in writing by the Project Supervisor, the City is entitled to deduct from the monies due the Contractor, as liquidated damages and not as a penalty, the amount identified in the Detailed Specifications for each portion of the work not timely completed for each calendar day of delay in completion of each portion of the work.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Liquidated damages under this section are in addition to any liquidated damages due under Section 5 of the General Conditions.

ARTICLE IV - The Contract Sum

(A) The City shall pay to the Contractor for the performance of the Contract, the unit prices as given in the Bid Forms for the estimated total of:

_____ dollars ($_____)

(B) The amount paid shall be equitably adjusted to cover changes in the work ordered by the Supervising Professional but not required by the contract documents.

ARTICLE V - Assignment

This Contract may not be assigned or subcontracted without the written consent of the City.

ARTICLE VI - Choice of Law

This Contract shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this agreement, the Contractor and the City agree to venue in a court of appropriate jurisdiction sitting within Washtenaw County for purposes of any action arising under this Contract.

Whenever possible, each provision of the contract will be interpreted in a manner as to be effective and valid under applicable law. The prohibition or invalidity, under applicable law, of any provision will not invalidate the remainder of the contract.

ARTICLE VII - Relationship of the Parties

The parties of the Contract agree that it is not a contract of employment but is a contract to

accomplish a specific result. Contractor is an independent contractor performing services for the City. Nothing contained in this Contract shall be deemed to constitute any other relationship between the City and the Contractor.

Contractor certifies that it has no personal or financial interest in the project other than the compensation it is to receive under the Contract. Contractor certifies that it is not, and shall not become, overdue or in default to the City for any contract, debt, or any other obligation to the City including real or personal property taxes. City shall have the right to set off any such debt against compensation awarded for services under this agreement.

ARTICLE VIII - Notice

All notices given under this contract shall be in writing, and shall be by personal delivery or by certified mail with return receipt requested to the parties at their respective addresses as specified in the contract documents or other address the Contractor may specify in writing..

ARTICLE IX - Indemnification

To the fullest extent permitted by law, for any loss not covered by insurance under this contract, Contractor shall indemnify, defend and hold harmless the City, its officers, employees and agents harmless from all suits, claims, judgments and expenses including attorney's fees resulting or alleged to result, in whole or in part, from any act or omission, which is in any way connected or associated with this contract, by the Contractor or anyone acting on the Contractor's behalf under this contract. Contractor shall not be responsible to indemnify the City for losses or damages caused by or resulting from the City's sole negligence.

ARTICLE X - Entire Agreement

This Contract represents the entire understanding between the City and the Contractor and it supersedes all prior representations or agreements whether written or oral. Neither party has relied on any prior representations in entering into this Contract. This Contract may be altered, amended or modified only by written amendment signed by the City and the Contractor.

FOR CONTRACTOR

By:_____

Its: _____

FOR THE CITY OF ANN ARBOR

By_____
John Hieftje, Mayor

By_____
Jacqueline Beaudry, City Clerk

Approved as to substance

By_____
Tom Crawford, Interim City Administrator

By_____
Sumedh Bahl,
Community Services Administrator

Approved as to form and content

_____
Stephen K. Postema, City Attorney

PERFORMANCE BOND

(1) _____ of _____ (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for **$**_____, the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written contract with the City dated _____, for: _____ and this bond is given for that contract in compliance with Act No. 213 of the Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq.

(3) Whenever the Principal is declared by the City to be in default under the contract, the Surety may promptly remedy the default or shall promptly:

(a) complete the contract in accordance with its terms and conditions; or

(b) obtain a bid or bids for submission to the City for completing the contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a contract between such bidder and the City, and make available, as work progresses, sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth in paragraph 1.

(4) Surety shall have no obligation to the City if the Principal fully and promptly performs under the contract.

(5) Surety agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder, or the specifications accompanying it shall in any way affect its obligations on this bond, and waives notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work, or to the specifications.

SIGNED AND SEALED this _____ day of _____, 2011.

(Name of Surety Company)

By
(Signature)

Its
(Title of Office)

(Name of Principal)

By
(Signature)

Its
(Title of Office)

Name and address of agent:

Approved as to form:

Stephen K. Postema, City Attorney

LABOR AND MATERIAL BOND

(1) _____ of _____, (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan, (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for the use and benefit of claimants as defined in Act 213 of Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq., in the amount of **$**_____, for the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written contract with the City, dated _____, for: _____; and this bond is given for that contract in compliance with Act No. 213 of the Michigan Public Acts of 1963 as amended;

(3) If the Principal fails to promptly and fully repay claimants for labor and material reasonably required under the contract, the Surety shall pay those claimants.

(4) Surety's obligations shall not exceed the amount stated in paragraph 1, and Surety shall have no obligation if the Principal promptly and fully pays the claimants.

SIGNED AND SEALED this _____ day of _____, 2011.

(Name of Surety Company)

By _____

(Signature)

Its

(Title of Office)

(Name of Principal)

By _____

(Signature)

Its

(Title of Office)

Approved as to form:

Stephen K. Postema, City Attorney

Name and address of agent:

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

The contract documents shall be signed in 2 copies by the City and the Contractor.

The contract documents are complementary and what is called for by any one shall be binding. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work. Materials or work described in words which so applied have a well-known technical or trade meaning have the meaning of those recognized standards.

In case of a conflict among the contract documents listed below in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

(1) Addenda in reverse chronological order; (2) Detailed Specifications; (3) Standard Specifications; (4) Drawings/Plans; (5) General Conditions; (6) Contract; (7) Bid Forms; (8) Bond Forms; (9) Proposal.

Section 2 - Order of Completion

The Contractor shall submit with each invoice, and at other times reasonably requested by the Supervising Professional, schedules showing the order in which the Contractor proposes to carry on the work. They shall include the dates at which the Contractor will start the several parts of the work, the estimated dates of completion of the several parts, and important milestones within the several parts.

Section 3 - Familiarity with Work

The Bidder or its representative shall make personal investigations of the site of the work and of existing structures and shall determine to its own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved, and all other factors affecting the work proposed under this Contract. The Bidder to whom this Contract is awarded will not be entitled to any additional compensation unless conditions are clearly different from those which could reasonably have been anticipated by a person making diligent and thorough investigation of the site.

The Bidder shall immediately notify the City upon discovery, and in every case prior to submitting its Bid, of every error or omission in the bidding documents that would be identified by a reasonably competent, diligent Bidder. In no case will a Bidder be allowed the benefit of extra compensation or time to complete the work under this Contract for extra expenses or time spent as a result of the error or omission.

Section 4 - Wage and CUB Agreement Requirement

Under this Contract, the Contractor shall conform to Chapter 14 of Title I of the Code of the City of Ann Arbor as amended; which in part states "...that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen, mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. At the request of the City, any contractor or subcontractor shall provide satisfactory proof of compliance with the contract provisions required by the Section."

Where the Contract and the Ann Arbor City Ordinance are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used.

Further, to the extent that any employees of the Contractor providing services under this contract are not part of the class of craftsmen, mechanics and laborers who receive a prevailing wage in conformance with Section 1:319 of Chapter 14 of Title I of the Code of the City of Ann Arbor, the Contractor agrees to conform to Chapter 23 of Title I of the Code of the City of Ann Arbor, as amended, which in part states:

1:814. Applicability.

(1) This Chapter shall apply to any person that is a contractor/vendor or grantee as defined in Section 1:813 that employs or contracts with five (5) or more individuals; provided, however, that this Chapter shall not apply to a non-profit contractor/vendor or non-profit grantee unless it employs or contracts with ten (10) or more individuals.

(2) This Chapter shall apply to any grant, contract, or subcontract or other form of financial assistance awarded to or entered into with a contractor/vendor or grantee after the effective date of this Chapter and to the extension or renewal after the effective date of this Chapter of any grant, contract, or subcontract or other form of financial assistance with a contractor/vendor or grantee.

1:815. Living Wages Required.

(1) Every contractor/vendor or grantee, as defined in Section 1:813, shall pay its covered employees a living wage as established in this Section.

(a) For a covered employer that provides employee health care to its employees, the living wage shall be $11.83 per hour, or the adjusted amount hereafter established under Section 1:815(3).

(b) For a covered employer that does not provide health care to its employees, the living wage shall be $13.19 per hour, or the adjusted amount hereafter established under Section 1:815(3).

(2) In order to qualify to pay the living wage rate for covered employers providing employee health care under subsection 1:815(1)(a), a covered employer shall furnish proof of said health care coverage and payment therefor to the City Administrator or his/her designee.

(3) The amount of the living wage established in this Section shall be adjusted upward no later than April 30, 2010, and every year thereafter by a percentage equal to the percentage increase, if any, in the federal poverty guidelines as published by the United States Department of Health and Human Services for the year 2010. Subsequent annual adjustments shall be based upon the percentage increase, if any, in the United States Department of Health and Human Services poverty guidelines when comparing the prior calendar year's poverty guidelines to the present calendar year's guidelines. The applicable percentage amount will be converted to an amount in cents by multiplying the existing wage under Section 1.815(1)(b) by said percentage, rounding upward to the next cent, and adding

this amount of cents to the existing living wage levels established under Sections 1:815(1)(a) and 1:815(1)(b). Prior to April 1 of each calendar year, the City will notify any covered employer of this adjustment by posting a written notice in a prominent place in City Hall, and, in the case of a covered employer that has provided an address of record to the City, by a written letter to each such covered employer.

Section 5 - Non-Discrimination

The Contractor agrees to comply with the nondiscrimination provisions of Chapter 112 of the Ann Arbor City Code and to take affirmative action to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate any inequality based upon race, national origin or sex. The Contractor agrees to comply with the provisions of Section 9:161 of Chapter 112 of the Ann Arbor City Code and in particular the following excerpts:

9:161 NONDISCRIMINATION BY CITY CONTRACTORS

(1) All contractors proposing to do business with the City of Ann Arbor shall satisfy the nondiscrimination administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All contractors shall receive approval from the Director prior to entering into a contract with the City, unless specifically exempted by administrative policy. All City contractors shall take affirmative action to insure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate inequality based upon race, national origin or sex.

(2) Each prospective contractor shall submit to the City data showing current total employment by occupational category, sex and minority group. If, after verifying this data, the Director concludes that it indicates total minority and female employment commensurate with their availability within the contractor's labor recruitment area, i.e., the area from which the contractor can reasonably be expected to recruit, said contractor shall be accepted by the Director as having fulfilled affirmative action requirements for a period of one year at which time the Director shall conduct another review. Other contractors shall develop an affirmative action program in conjunction with the Director. Said program shall include specific goals and timetables for the hiring and promotion of minorities and females. Said goals shall reflect the availability of minorities and females within the contractor's labor recruitment area. In the case of construction contractors, the Director shall use for employment verification the labor recruitment area of the Ann Arbor-Ypsilanti standard metropolitan statistical area. Construction contractors determined to be in compliance shall be accepted by the Director as having fulfilled affirmative action requirements for a period of six (6) months at which time the Director shall conduct another review.

(3) In hiring for construction projects, contractors shall make good faith efforts to employ local persons, so as to enhance the local economy.

(4) All contracts shall include provisions through which the contractor agrees, in addition to any other applicable Federal or State labor laws:

(a) To set goals, in conference with the Human Resources Director, for each job category or division of the work force used in the completion of the City work;

(b) To provide periodic reports concerning the progress the contractor has made in meeting the affirmative action goals it has agreed to;

(c) To permit the Director access to all books, records and accounts pertaining to its employment practices for the purpose of determining compliance with the affirmative action requirements.

(5) The Director shall monitor the compliance of each contractor with the nondiscrimination provisions of each contract. The Director shall develop procedures and regulations consistent with the administrative policy adopted by the City Administrator for notice and enforcement of non-compliance. Such procedures and regulations shall include a provision for the posting of contractors not in compliance.

(6) All City contracts shall provide further that breach of the obligation not to discriminate shall be a material breach of the contract for which the City shall be entitled, at its option, to do any or all of the following:

(a) To cancel, terminate, or suspend the contract in whole or part and/or refuse to make any required periodic payments under the contract;

(b) Declare the contractor ineligible for the award of any future contracts with the City for a specified length of time;

(c) To recover liquidated damages of a specified sum, said sum to be that percentage of the labor expenditure for the time period involved which would have accrued to minority group members had the affirmative action not been breached;

(d) Impose for each day of non-compliance, liquidated damages of a specified sum, based upon the following schedule:

Contract Amount	Assessed Damages Per Day of Non-Compliance
$ 10,000 - 24,999	$ 25.00
25,000 - 99,999	50.00
100,000 - 199,999	100.00
200,000 - 499,999	150.00
500,000 - 1,499,999	200.00
1,500,000 - 2,999,999	250.00
3,000,000 - 4,999,999	300.00
5,000,000 - and above	500.00

(e) In addition the contractor shall be liable for any costs or expenses incurred by the City of Ann Arbor in obtaining from other sources the work and services to be rendered or performed or the goods or properties to be furnished or delivered to the City under this contract.

Section 6 - Materials, Appliances, Employees

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary or used for the execution and completion of the work. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and materials shall be of the highest quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The Contractor shall at all times enforce strict discipline and good order among its employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned.

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

The Contractor shall employ competent laborers and mechanics for the work under this Contract. For work performed under this Contract, employment preference shall be given to qualified local residents.

Section 8 - Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringements of any patent rights and shall hold the City harmless from loss on account of infringement except that the City shall be responsible for all infringement loss when a particular process or the product of a particular manufacturer or manufacturers is specified, unless the City has notified the Contractor prior to the signing of the Contract that the particular process or product is patented or is believed to be patented.

Section 9 - Permits and Regulations

The Contractor must secure and pay for all permits, permit or plan review fees and licenses necessary for the prosecution of the work. These include but are not limited to City building permits, right-of-way permits, lane closure permits, right-of-way occupancy permits, and the like. The City shall secure and pay for easements shown on the plans unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the contract documents are at variance with those requirements, it shall promptly notify the Supervising Professional in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work.

Section 10 - Protection of the Public and of Work and Property

The Contractor is responsible for the means, methods, sequences, techniques and procedures of construction and safety programs associated with the work contemplated by this contract. The Contractor, its agents or sub-contractors, shall comply with the "General Rules and Regulations for the Construction Industry" as published by the Construction Safety Commission of the State of Michigan and to all other local, State and National laws, ordinances, rules and regulations pertaining to safety of persons and property.

The Contractor shall take all necessary and reasonable precautions to protect the safety of the public. It shall continuously maintain adequate protection of all work from damage, and shall take all necessary and reasonable precautions to adequately protect all public and private property from injury or loss arising in connection with this Contract. It shall make good any damage, injury or loss to it's work and to public and private property resulting from lack of reasonable protective precautions, except as may be due to errors in the contract documents, or caused by agents or employees of the City. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

In an emergency affecting the safety of life, or the work, or of adjoining property, the Contractor is, without special instructions or authorization from the Supervising Professional, permitted to act at its discretion to prevent the threatened loss or injury. It shall also so act, without appeal, if authorized or instructed by the Supervising Professional.

Any compensation claimed by the Contractor for emergency work shall be determined by agreement or in accordance with the terms of Claims for Extra Cost - Section 15.

Section 11 - Inspection of Work

The City shall provide sufficient competent personnel for the inspection of the work.

The Supervising Professional shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection.

If the specifications, the Supervising Professional's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Supervising Professional timely notice of its readiness for inspection, and if the inspection is by an authority other than the Supervising Professional, of the date fixed for the inspection. Inspections by the Supervising Professional shall be made promptly, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Supervising Professional, it must, if required by the Supervising Professional, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Supervising Professional, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to be in accordance with the contract documents, the City shall pay the cost of re-examination and replacement. If the work is not in accordance with the contract documents, the Contractor shall pay the cost.

Section 12 - Superintendence

The Contractor shall keep on the work site, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Supervising Professional. The superintendent will be responsible to perform all on-site project management for the Contractor. The superintendent shall be experienced in the work required for this Contract. The superintendent shall represent the Contractor and all direction given to the superintendent shall be binding as if given to the Contractor. Important directions shall immediately be confirmed in writing to the Contractor. Other directions will be confirmed on written request. The Contractor shall give efficient superintendence to the work, using its best skill and attention.

Section 13 - Changes in the Work

The City may make changes to the quantities of work within the general scope of the Contract at any time by a written order and without notice to the sureties. If the changes add to or deduct from the extent of the work, the Contract Sum shall be adjusted accordingly. All the changes shall be executed under the conditions of the original Contract except that any claim for extension of time caused by the change shall be adjusted at the time of ordering the change.

In giving instructions, the Supervising Professional shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Supervising Professional, and no claim for an addition to the Contract Sum shall be valid unless the additional work was ordered in writing.

The Contractor shall proceed with the work as changed and the value of the work shall be determined as provided in Claims for Extra Cost - Section 15.

Section 14 - Extension of Time

Extension of time stipulated in the Contract for completion of the work will be made if and as the Supervising Professional may deem proper under any of the following circumstances:

(1) When work under an extra work order is added to the work under this Contract;

(2) When the work is suspended as provided in Section 20;

(3) When the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, and which were not the result of its fault or negligence;

(4) Delays in the progress of the work caused by any act or neglect of the City or of its employees or by other Contractors employed by the City;

(5) Delay due to an act of Government;

(6) Delay by the Supervising Professional in the furnishing of plans and necessary information;

(7) Other cause which in the opinion of the Supervising Professional entitles the Contractor to an extension of time.

The Contractor shall notify the Supervising Professional within 7 days of an occurrence or conditions which, in the Contractor's opinion, entitle it to an extension of time. The notice shall be in writing and submitted in ample time to permit full investigation and evaluation of the Contractor's claim. The Supervising Professional shall acknowledge receipt of the Contractor's notice within 7 days of its receipt. Failure to timely provide the written notice shall constitute a waiver by the Contractor of any claim.

In situations where an extension of time in contract completion is appropriate under this or any other section of the contract, the Contractor understands and agrees that the only available adjustment for events that cause any delays in contract completion shall be extension of the required time for

contract completion and that there shall be no adjustments in the money due the Contractor on account of the delay.

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section l3. No claim shall be valid unless so made.

If the Supervising Professional orders, in writing, the performance of any work not covered by the contract documents, and for which no item of work is provided in the Contract, and for which no unit price or lump sum basis can be agreed upon, then the extra work shall be done on a Cost-Plus-Percentage basis of payment as follows:

(1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;

(2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same; the cost of all material and supplies required of either temporary or permanent character; rental of all power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;

(3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility;

(4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;

(5) Payments of all charges for work under this Section in any one month shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.

No additional compensation will be provided for additional equipment, materials, personnel, overtime or special charges required to perform the work within the time requirements of the Contract.

When extra work is required and no suitable price for machinery and equipment can be determined in accordance with this Section, the hourly rate paid shall be 1/40 of the basic weekly rate listed in the Rental Rate Blue Book published by Dataquest Incorporated and applicable to the time period the equipment was first used for the extra work. The hourly rate will be deemed to include all costs of operation such as bucket or blade, fuel, maintenance, "regional factors", insurance, taxes, and the

like, but not the costs of the operator.

Section 16 - Progress Payments

The Contractor shall submit each month, or at longer intervals, if it so desires, an invoice covering work performed for which it believes payment, under the Contract terms, is due. The submission shall be to the City's Finance Department - Accounting Division. The Supervising Professional will, within 10 days following submission of the invoice, prepare a certificate for payment for the work in an amount to be determined by the Supervising Professional as fairly representing the acceptable work performed during the period covered by the Contractor's invoice. To insure the proper performance of this Contract, the City will retain a percentage of the estimate in accordance with Act 524, Public Acts of 1980. The City will then, following the receipt of the Supervising Professional's Certificate, make payment to the Contractor as soon as feasible, which is anticipated will be within 15 days.

An allowance may be made in progress payments if substantial quantities of permanent material have been delivered to the site but not incorporated in the completed work if the Contractor, in the opinion of the Supervising Professional, is diligently pursuing the work under this Contract. Such materials shall be properly stored and adequately protected. Allowance in the estimate shall be at the invoice price value of the items. Notwithstanding any payment of any allowance, all risk of loss due to vandalism or any damages to the stored materials remains with the Contractor.

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract Sum upon completion of erection of all equipment furnished, but not later than 60 days after the date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than l80 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

With each invoice for periodic payment, the Contractor shall enclose a Contractor's Declaration - Section 43, and an updated project schedule per Order of Completion - Section 2.

Section 17 - Deductions for Uncorrected Work

If the Supervising Professional decides it is inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made.

Section 18 - Correction of Work Before Final Payment

The Contractor shall promptly remove from the premises all materials condemned by the Supervising Professional as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract and without expense to the City and shall bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement.

If the Contractor does not remove the condemned work and materials within l0 days after written notice, the City may remove them and, if the removed material has value, may store the material at the expense of the Contractor. If the Contractor does not pay the expense of the removal within 10 days thereafter, the City may, upon 10 days written notice, sell the removed materials at auction or private sale and shall pay to the Contractor the net proceeds, after deducting all costs and expenses that should have been borne by the Contractor. If the removed material has no value, the Contractor must pay the City the expenses for disposal within 10 days of invoice for the disposal costs.

The inspection or lack of inspection of any material or work pertaining to this Contract shall not relieve the Contractor of its obligation to fulfill this Contract and defective work shall be made good. Unsuitable materials may be rejected by the Supervising Professional notwithstanding that the work and materials have been previously overlooked by the Supervising Professional and accepted or estimated for payment or paid for. If the work or any part shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good the defect in a manner satisfactory to the Supervising Professional. The judgment and the decision of the Supervising Professional as to whether the materials supplied and the work done under this Contract comply with the requirements of the Contract shall be conclusive and final.

Section 19 - Acceptance and Final Payment

Upon receipt of written notice that the work is ready for final inspection and acceptance, the Supervising Professional will promptly make the inspection. When the Supervising Professional finds the work acceptable under the Contract and the Contract fully performed, the Supervising Professional will promptly sign and issue a final certificate stating that the work required by this Contract has been completed and is accepted by the City under the terms and conditions of the Contract. The entire balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor by the City within 30 days after the date of the final certificate.

Before issuance of final certificates, the Contractor shall file with the City:

(1) The consent of the surety to payment of the final estimate;
(2) The Contractor's Affidavit in the form required by Section 44.

In case the Affidavit or consent is not furnished, the City may retain out of any amount due the Contractor, sums sufficient to cover all lienable claims.

The making and acceptance of the final payment shall constitute a waiver of all claims by the City except those arising from:

(1) unsettled liens;
(2) faulty work appearing within 12 months after final payment;
(3) hidden defects in meeting the requirements of the plans and specifications;
(4) manufacturer's guarantees.

It shall also constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

Section 20 - Suspension of Work

The City may at any time suspend the work, or any part by giving 5 days notice to the Contractor in writing. The work shall be resumed by the Contractor within 10 days after the date fixed in the

written notice from the City to the Contractor to do so. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of the suspension.

If the work, or any part, shall be stopped by the notice in writing, and if the City does not give notice in writing to the Contractor to resume work at a date within 90 days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work suspended and will be entitled to the estimates and payments for all work done on the portions abandoned, if any, plus 10% of the value of the work abandoned, to compensate for loss of overhead, plant expense, and anticipated profit.

Section 21 - Delays and The City's Right to Terminate Contract

If the Contractor refuses or fails to prosecute the work, or any separate part of it, with the diligence required to insure completion, ready for operation, within the allowable number of consecutive calendar days specified plus extensions, or fails to complete the work within the required time, the City may, by written notice to the Contractor, terminate its right to proceed with the work or any part of the work as to which there has been delay. After providing the notice the City may take over the work and prosecute it to completion, by contract or otherwise, and the Contractor and its sureties shall be liable to the City for any excess cost to the City. If the Contractor's right to proceed is terminated, the City may take possession of and utilize in completing the work, any materials, appliances and plant as may be on the site of the work and useful for completing the work. The right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages where an extension of time is granted under Extension of Time - Section 14.

If the Contractor is adjudged a bankrupt, or if it makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it fails to make prompt payments to subcontractors or for material or labor, or persistently disregards laws, ordinances or the instructions of the Supervising Professional, or otherwise is guilty of a substantial violation of any provision of the Contract, then the City, upon the certificate of the Supervising Professional that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor 3 days written notice, terminate this Contract. The City may then take possession of the premises and of all materials, tools and appliances thereon and without prejudice to any other remedy it may have, make good the deficiencies or finish the work by whatever method it may deem expedient, and deduct the cost from the payment due the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of finishing the work, including compensation for additional managerial and administrative services exceeds the unpaid balance of the Contract Sum, the Contractor and its surety are liable to the City for any excess cost incurred. The expense incurred by the City, and the damage incurred through the Contractor's default, shall be certified by the Supervising Professional.

Section 22 - Contractor's Right to Terminate Contract

If the work should be stopped under an order of any court, or other public authority, for a period of 3 months, through no act or fault of the Contractor or of anyone employed by it, then the Contractor may, upon 7 days written notice to the City, terminate this Contract and recover from the City payment for all acceptable work executed plus reasonable profit.

Section 23 - City's Right To Do Work

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the City, 3 days after giving written notice to the Contractor and its surety may, without prejudice to any other remedy the City may have, make good the deficiencies and may deduct the cost from the payment due to the Contractor.

Section 24 - Removal of Equipment and Supplies

In case of termination of this Contract before completion, from any or no cause, the Contractor, if notified to do so by the City, shall promptly remove any part or all of its equipment and supplies from the property of the City, failing which the City shall have the right to remove the equipment and supplies at the expense of the Contractor.

The removed equipment and supplies may be stored by the City and, if all costs of removal and storage are not paid by the Contractor within 10 days of invoicing, the City upon 10 days written notice may sell the equipment and supplies at auction or private sale, and shall pay the Contractor the net proceeds after deducting all costs and expenses that should have been borne by the Contractor and after deducting all amounts claimed due by any lien holder of the equipment or supplies.

Section 25 - Responsibility for Work and Warranties

The Contractor assumes full responsibility for any and all materials and equipment used in the construction of the work and may not make claims against the City for damages to materials and equipment from any cause except negligence or willful act of the City. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the project (except for any part covered by Partial Completion and Acceptance - Section 26). The Contractor shall make good all work damaged or destroyed before acceptance. All risk of loss remains with the Contractor until final acceptance of the work (Section 19) or partial acceptance (Section 26). The Contractor is advised to investigate obtaining its own builders risk insurance.

The Contractor shall guarantee the quality of the work for a period of one year. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of one year. At the end of one year after the Contractor's receipt of final payment, the complete work, including equipment and materials furnished and installed under the contract, shall be inspected by the Contractor and the Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days.

The Contractor shall assign all manufacturer or material supplier warranties to the City prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

Section 26 - Partial Completion and Acceptance

If at any time prior to the issuance of the final certificate referred to in Acceptance and Final Payment - Section 19, any portion of the permanent construction has been satisfactorily completed, and if the Supervising Professional determines that portion of the permanent construction is not required for the operations of the Contractor but is needed by the City, the Supervising Professional shall issue to the Contractor a certificate of partial completion, and immediately the City may take over and use the portion of the permanent construction described in the certificate, and exclude the Contractor from that portion.

The issuance of a certificate of partial completion shall not constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates if the Contractor has failed to complete it in accordance with the terms of this Contract. The issuance of the certificate shall not release the Contractor or its sureties from any obligations under this Contract including bonds.

If prior use increases the cost of, or delays the work, the Contractor shall be entitled to extra compensation, or extension of time, or both, as the Supervising Professional may determine.

Section 27 - Payments Withheld Prior to Final Acceptance of Work

The City may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to the extent reasonably appropriate to protect the City from loss on account of:

(1) Defective work not remedied;

(2) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor;

(3) Failure of the Contractor to make payments properly to subcontractors or for material or labor;

(4) Damage to another Contractor.

When the above grounds are removed or the Contractor provides a Surety Bond satisfactory to the City which will protect the City in the amount withheld, payment shall be made for amounts withheld under this section.

Section 28 - Contractor's Insurance

A. The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself from all claims for bodily injuries, death or property damage which may arise under this Contract; whether the acts were made by the Contractor or by any subcontractor or anyone employed by them directly or indirectly. The following insurance policies are required:
   1. Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

Bodily Injury by Accident - $500,000 each accident
Bodily Injury by Disease - $500,000 each employee
Bodily Injury by Disease - $500,000 each policy limit

2. Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 07 98. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements including, but not limited to: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further, the following minimum limits of liability are required:

   $1,000,000 Each occurrence as respect Bodily Injury Liability or Property Damage Liability, or both combined.

   $2,000,000 Per Job General Aggregate

   $1,000,000 Personal and Advertising Injury

   $2,000,000 Products and Completed Operations Aggregate

3. Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 07 97. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. Further, the limits of liability shall be $1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

4. Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of $1,000,000.

B. Insurance required under Section A.2 and A.3 of this Contract shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City.

C. In the case of all Contracts involving on-site work, the Contractor shall provide to the City before the commencement of any work under this Contract documentation demonstrating it has obtained the above mentioned policies. Documentation must provide and demonstrate an unconditional 30 day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number; name of insurance company; name and address of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which shall be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified. An original certificate of insurance may be provided as an initial indication of the required insurance, provided that no later than 21 calendar days after commencement of any work the Contractor supplies a

copy of the endorsements required on the policies. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies to the Administering Department at least ten days prior to the expiration date.

D. Any Insurance provider of Contractor shall be admitted and authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of 'A' Overall and a minimum Financial Size Category of 'V'. Insurance policies and certificates issued by non-admitted insurance companies are not acceptable unless approved in writing by the City.

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

(1) A Performance Bond to the City of Ann Arbor for the amount of the bid(s) accepted;
(2) A Labor and Material Bond to the City of Ann Arbor for the amount of the bid(s) accepted.

Bonds shall be executed on forms supplied by the City in a manner and by a Surety Company satisfactory to the City Attorney.

Section 30 - Damage Claims

The Contractor shall be held responsible for all damages to property of the City or others, caused by or resulting from the negligence of the Contractor, its employees, or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. The Contractor must restore all property injured including sidewalks, curbing, sodding, pipes, conduit, sewers or other public or private property to not less than its original condition with new work.

Section 31 - Refusal to Obey Instructions

If the Contractor refuses to obey the instructions of the Supervising Professional, the Supervising Professional shall withdraw inspection from the work, and no payments will be made for work performed thereafter nor may work be performed thereafter until the Supervising Professional shall have again authorized the work to proceed.

Section 32 - Assignment

Neither party to the Contract shall assign the Contract without the written consent of the other. The Contractor may assign any monies due to it to a third party acceptable to the City.

Section 33 - Rights of Various Interests

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Supervising Professional, to secure the completion of the various portions of the work in general harmony.

The Contractor is responsible to coordinate all aspects of the work, including coordination of, and

with, utility companies and other contractors whose work impacts this project.

Section 34 - Subcontracts

The Contractor shall not award any work to any subcontractor without prior written approval of the City. The approval will not be given until the Contractor submits to the City a written statement concerning the proposed award to the subcontractor. The statement shall contain all information the City may require.

The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and all other contract documents applicable to the work of the subcontractors and to give the Contractor the same power to terminate any subcontract that the City may exercise over the Contractor under any provision of the contract documents.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the City.

Section 35 - Supervising Professional's Status

The Supervising Professional has the right to inspect any or all work. The Supervising Professional has authority to stop the work whenever stoppage may be appropriate to insure the proper execution of the Contract. The Supervising Professional has the authority to reject all work and materials which do not conform to the Contract and to decide questions which arise in the execution of the work.

The Supervising Professional shall make all measurements and determinations of quantities. Those measurements and determinations are final and conclusive between the parties.

Section 36 - Supervising Professional's Decisions

The Supervising Professional shall, within a reasonable time after their presentation to the Supervising Professional, make decisions in writing on all claims of the City or the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the contract documents.

Section 37 - Storing Materials and Supplies

Materials and supplies may be stored at the site of the work at locations agreeable to the City unless specific exception is listed elsewhere in these documents. Ample way for foot traffic and drainage must be provided, and gutters must, at all times, be kept free from obstruction. Traffic on streets shall be interfered with as little as possible. The Contractor may not enter or occupy with agents, employees, tools, or material any private property without first obtaining written permission from its owner. A copy of the permission shall be furnished to the Supervising Professional.

Section 38 - Lands for Work

The Contractor shall provide, at its own expense and without liability to the City, any additional land and access that may be required for temporary construction facilities or for storage of materials.

Section 39 - Cleaning Up

The Contractor shall, as directed by the Supervising Professional, remove at its own expense from the City's property and from all public and private property all temporary structures, rubbish and waste materials resulting from its operations unless otherwise specifically approved, in writing, by the Supervising Professional.

Section 40 - Salvage

The Supervising Professional may designate for salvage any materials from existing structures or underground services. Materials so designated remain City property and shall be transported or stored at a location as the Supervising Professional may direct.

Section 41 - Night, Saturday or Sunday Work

No night or Sunday work (without prior written City approval) will be permitted except in the case of an emergency and then only to the extent absolutely necessary. The City may allow night work which, in the opinion of the Supervising Professional, can be satisfactorily performed at night. Night work is any work between 8:00 p.m. and 7:00 a.m. No Saturday work will be permitted unless the Contractor gives the Supervising Professional at least 48 hours but not more than 5 days notice of the Contractor's intention to work the upcoming Saturday.

Section 42 - Sales Taxes

Under State law the City is exempt from the assessment of State Sales Tax on its direct purchases. Contractors who acquire materials, equipment, supplies, etc. for incorporation in City projects are not likewise exempt. State Law shall prevail. The Bidder shall familiarize itself with the State Law and prepare its Bid accordingly. No extra payment will be allowed under this Contract for failure of the Contractor to make proper allowance in this bid for taxes it must pay.

Section 43

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period _____, 201__, to _____, 20__, performed any work, furnished any materials, sustained any loss, damage or delay, or otherwise done anything in addition to the regular items (or executed change orders) set forth in the Contract titled _____, for which I shall ask, demand, sue for, or claim compensation or extension of time from the City, except as I hereby make claim for additional compensation or extension of time as set forth on the attached itemized statement. I further declare that I have paid all payroll obligations related to this Contract that have become due during the above period and that all invoices related to this Contract received more than 30 days prior to this declaration have been paid in full except as listed below.

There is/is not (Contractor please circle one and strike one as appropriate) an itemized statement attached regarding a request for additional compensation or extension of time.

_____ _____

Contractor Date

By_____
(Signature)

Its_____
(Title of Office)

Past due invoices, if any, are listed below.

Section 44

CONTRACTOR'S AFFIDAVIT

The undersigned Contractor,_____, represents that on , 20_____, it was awarded a contract by the City of Ann Arbor, Michigan to _____ under the terms and conditions of a Contract titled _____.
The Contractor represents that all work has now been accomplished and the Contract is complete.

The Contractor warrants and certifies that all of its indebtedness arising by reason of the Contract has been fully paid or satisfactorily secured; and that all claims from subcontractors and others for labor and material used in accomplishing the project, as well as all other claims arising from the performance of the Contract, have been fully paid or satisfactorily settled. The Contractor agrees that, if any claim should hereafter arise, it shall assume responsibility for it immediately upon request to do so by the City of Ann Arbor.

The Contractor, for valuable consideration received, does further waive, release and relinquish any and all claims or right of lien which the Contractor now has or may acquire upon the subject premises for labor and material used in the project owned by the City of Ann Arbor.

This affidavit is freely and voluntarily given with full knowledge of the facts.

Contractor

By_____
(Signature)

Its_____
(Title of Office)

Subscribed and sworn to before me, on this _____ day of _____, 2011
_____ , _____ County, Michigan
Notary Public
My commission expires on:

STANDARD SPECIFICATIONS

All work under this contract shall be performed in accordance with the Public Services Department Standard Specifications in effect at the date of availability of the contract documents stipulated in the Advertisement. All work under this Contract which is not included in these Standard Specifications, or which is performed using modifications to these Standard Specifications, shall be performed in accordance with the Detailed Specifications included in these contract documents.

A copy of the Public Services Department Standard Specifications may be purchased from the Engineering Division, (Fourth Floor, City Hall, Ann Arbor, Michigan), for $35.00 per copy. In addition, a copy of these Standard Specifications is available for public viewing at the Engineering Division office, for review Monday through Friday between the hours of 8:30 a.m. and 4:00 p.m. In addition, a copy of these Standard Specifications is available for public viewing on the City of Ann Arbor Website: www.a2gov.org/government/publicservices/project_management/privatedev/Pages/Standardspecificationbook.aspx

SPECIFICATIONS TABLE OF CONTENTS

DIVISION 10 SPECIALTIES

DIVISION 11 EQUIPMENT

NA

DIVISION 12 FURNISHINGS

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DIVISION 13 SPECIAL CONSTRUCTION

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DIVISION 14 CONVEYING SYSTEMS

NA

DIVISION 15 MECHANICAL

See drawings for specifications.

DIVISION 16 ELECTRICAL

See drawings for specifications.

DRAWING SHEET INDEX

SECTION 00920 - ALTERNATES

PART 1 - GENERAL

A. An Alternate is an amount proposed by Bidders and stated on the Bid Form, or attached thereto, for certain items that may be added to or deducted from Base Bid amount if the Owner decides to accept the corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems or installation methods described in Contract Documents.
B. Coordination: Coordinate related Work and modify or adjust adjacent Work as necessary to ensure that Work affected by each accepted Alternate is complete and fully integrated into the Project.
C. Notification: Immediately following Contract award, prepare and distribute to each party involved, notification of the status of each Alternate. Indicate whether Alternates have been accepted, rejected or deferred for consideration at a later date. Include a complete description of negotiated modifications to Alternates if applicable.
D. Schedule: A "**Schedule of Alternates**" is included at the end of this Section.
    1. Include as part of each Alternate, miscellaneous devices, accessory objects and similar items incidental to or required for a complete installation whether or not mentioned as part of the alternate.
    2. Specification Sections may be referenced in the Schedule and shall contain requirements for materials and methods necessary to achieve the Work described under each alternate.
E. Refer to Section 00100 – Instructions to Bidders for General Contractor, Construction Manager, and/or sub contractor responsibilities pertaining to Specification inconsistencies

PART 2 - EXECUTION

A. **The Contract Work shall include all Alternates, which are listed below, and shall be appropriately included in the Base Bid and submitted as part of the complete scope of work as described below**.
B. Provide all of the requested alternate pricing.
    1. Alternate pricing shall be used to allow the **Owner** the option to add/delete work to the base construction pricing noted as Base Bid.
    2. The Alternate pricing shall be included in the Contract at the sole discretion of the **Owner** after the review of the budget and before awarding the contract.
    3. Bid Proposals shall be ranked and evaluated by the Owner based on “Base Bid” pricing, and any modifications to rankings base on the acceptance or rejection of Alternates shall be at the discretion of the Owner.
    4. **Included in the Alternate Bid shall be: labor, materials, equipment, services, facilities and all items required to complete the Work and/or as further indicated on the drawings and in the specifications.**

C. **Schedule of Alternates follows on the next page. All ALTERNATE items shall be quoted herein and this Section shall be copied and attached to the Bid Form - 00300.**

The following Alternates Schedule shall be attached to the Bid Form – 00300 and submitted in triplicate as noted.

PART 3 - ALTERNATES SCHEDULE:

1. Substitute LED for florescent lights in all Fixture “B” locations as indicated on drawings sheet number ME1.1:

   ALTERNATE #1 - ADD COST $ _____

End of Schedule

END OF SECTION 00920

SECTION 01010 - SUMMARY OF THE WORK

PART 1 - GENERAL

1.01 DESCRIPTION OF THE PROJECT:

A. Provide all material and labor to complete the renovation of Veterans Memorial Park Locker Room Renovation as described and intended by the complete body of work represented in these Contract Documents – including:
   1. Selective Demolition, Renovation, Mechanical, Electrical, and Plumbing Work including receipt, handling, and installation of Owner-supplied equipment.

1.02 DESCRIPTION OF CONTRACT REQUIREMENTS

A. Summary by Reference
   1. The work can be summarized by reference to the requirements of the various Contract Documents, which in turn make reference to the requirements of other applicable provisions which control or influence the work; and these references can be summarized but are not necessarily limited to the following:
      a. The Executed Owner-Contractor Agreement.
      b. The General and Supplementary Conditions - which are bound herewith or included by reference in this project Manual.
      c. The Drawings - which are listed in the "Drawing Sheets" as of the date of these Contract Documents are attached.
      d. The Specification Sections - that are listed in the "Table of Contents" and bound herewith in this Project Manual.
      e. Any Addenda or Modifications to the Contract Documents, which may have been bound herewith (in this Project Manual) or distributed by transmittal subsequent to the binding hereof.
      f. Governing regulations, which have a bearing on the performance of the work; copies can be obtained from or reviewed at the local, State or Federal Agency responsible for the regulation in each case.
      g. Submittals (of every kind), copies of which are retained by the Contractor at the site.
      h. Miscellaneous elements of information having a bearing on the performance of the work, such as reports of general trade union negotiations: copies must be obtained by the Contractor through normal channels of information.

B. Refer to **Section 00100 – Instructions to Bidders** for General Contractor, Construction Manager, and/or sub contractor responsibilities pertaining to Specification inconsistencies.

PART 2 - SPECIAL CONSIDERATIONS:

2.01 GENERAL:

A. All products incorporated into the building construction shall be asbestos free. Contractors shall submit a signed and notarized statement to the Owner to this effect for incorporation into the asbestos management plan.

B. All painted/coated products and plumbing components incorporated into the building construction shall be lead free. Contractors shall submit a signed statement to the Owner to this effect for incorporation into the lead inspection plan.

C. All adhesives, coatings and paints may not contain any Volatile Organic Compounds, unless a waiver is obtained from the Owner.

2.02 OCCUPANCY BY CONTRACTOR AND OWNER:

A. The locker rooms in question are used by swimmers in the summer season and by ice skaters in the Fall, Winter and Spring. Therefore the rooms can be made available for the renovation work for a limited time only, as follows:

September 5, 2011: Labor Day, last day of the swimming season
September 6, 2011: Both locker rooms available for start of work
September 20, 2011: Work to be complete and both locker rooms occupied.

All shop drawing approvals shall be complete in time to allow full procurement of materials to facilitate an immediate start on September 6, 2011.

2.03 OWNER-FURNISHED PRODUCTS:

A. The Owner will furnish products as indicated elsewhere in these Documents. The Work includes receiving, handling, and installing Owner-supplied products, including providing accessories materials, making all necessary connections, commissioning, and coordinating with the Product Manufacturer(s).
   1. Owner will arrange for and deliver Shop Drawings, Product Data, and Samples to Contractor.
   2. Contractor shall install and otherwise incorporate Owner-furnished items into the Work.

2.04 WORK SEQUENCE and COORDINATION WITH OTHERS:

A. Outline Schedule:
   1. This Project is anticipated to consist of a single phase within the time frame described under paragraph 2.02 above..
   2. All Bidders are to maintain a Construction Schedule that will meet the start and end dates noted herein.
   3. If no “end date” is noted, but the Contractor has submitted a number of days for construction on the Bid Form, the Contractor shall create and maintain a schedule that reflects their submitted time period.
B. Other contractor’s may be working on the premises during the same timeframe.
C. Sequencing of the various elements of the work may be required and, if so, will be established at the Pre-Construction Conference based upon input from the Owner, Architect and all Contractors. The sequence, as it affects the Owner’s Occupancy, may be modified or adjusted at any time at the discretion of the Owner.
D. Should it become necessary to interrupt and/or shutdown any service (mechanical, plumbing, electrical, etc.) which effects any building area or component or any adjacent site outside the immediate work area, the contractor shall do such work only after notifying the Owner, and all relevant adjacent property owners, a minimum of 48 hours prior to such anticipated interruption and/or shutdown and then only after receiving the Owner's approval to do so.

END OF SECTION 01010

SECTION 01019 - CONTRACT CONSIDERATIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. The Contractor shall complete appropriate Schedules, Applications, and Forms as Records of the Project. Note owner-supplied Change Order From. For other purposes, the use of AIA documents is strongly encouraged. Any other proprietary forms must be approved by the Owner/Architect prior to be introduced into record by the Contractor.
B. Schedule of Values
C. Applications for Payment, including Substantial Completion
D. Project Change Procedures
E. Additional Information Available to Contractor

1.02 RELATED SECTIONS:

A. Section 00920 - Alternates
B. Section 01010 - Summary of Work
C. Section 01039 - Project Coordination
D. Section 01300 - Submittals
E. Section 01600 - Product Substitutions
F. Section 01700 - Contract Close-Outs

PART 2 - CONTRACT REQUIREMENTS:

2.01 SCHEDULE OF VALUES:

A. Submit a complete **Schedule of Values** in duplicate within 10 days after date of Owner-Contractor Agreement, unless requested previously by the Owner or Architect.
   1. The Schedule of Values shall be used as a basis for determining progress payments for the contract or any designated lump sum bid item, and shall be in such form and sufficient detail to correctly represent a reasonable apportionment of the Contract Sum.
   2. Each activity in the Schedule of Values shall delineate one construction activity. The costing for each activity should include all costs for the labor and materials or equipment required to complete the activity. The sum of the values for the construction activities, within a bid item, must equal the total bid amount for that item.
   3. Prior to submitting an Application for Payment, the Contractor shall have submitted a detailed Schedule of Values and obtained approval from the Owner/Architect.
B. Revise Schedule of Values to list approved Change Orders with each Application for Payment as the Project progresses.
C. The Contractor may be required to provide certification from the Subcontractors certifying the subcontract amounts.

2.02 APPLICATION FOR PAYMENT

A. Submit typed application on **AIA Form G702 - Application and Certificate for Payment,** including any required Continuation Sheets. Contractor's standard form or electronic media printout will be considered only if previously approved by the Architect.
B. Format:
   1. Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification section. Break subcontract amounts further into several line items which will indicate individual contractor work within each section as well as allowances. Identify site mobilization, bonds and insurance as separate line items at the top of this schedule.
   2. Break Contract Sum down in enough detail to facilitate evaluation of Applications for Payment at the discretion of the Architect/Owner.
   3. Include separately from each line item, a directly proportional amount of Contractor's overhead and profit.

4. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
5. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the period covered by the application.
6. All forms shall have a signature line for the Architect, for approval prior to submission to the Owner.
7. Provide 3 notarized originals for Architect's signature. After signing - one original will be retained by the Architect; one retained by the Owner; and one returned with the payment to the Contractor.

C. Payment Period: Typically - one calendar month.
D. Waiver of Liens shall be provided ascertaining payment to subcontractors of monies distributed from previous month's application.
E. Where deemed appropriate by the Owner, Applications for Payment shall be accompanied by certified payroll records to verify that Wage Decision Guidelines applicable to the project are being adhered to by the Contractor (where required herein these Documents).
F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include:
1. List of subcontractors.
2. List of suppliers and fabricators.
3. Schedule of Values.
4. Contractor's Construction Schedule (preliminary if not final).
5. Submittal Schedule (preliminary if not final).
6. List of Contractor's staff assignments.
7. Copies of building permits.
8. Copies of licenses from governing authorities.
9. Certificates of insurance and insurance policies.
10. Performance and payment bonds (if required).

G. **Final Payment Application** - Actions and submittals that must precede or coincide with submittal of the final Application for Payment include the following:
1. Submission of **Certificate of Substantial Completion AIA G704**.
2. Completion of Project closeout requirements.
3. Completion of items specified for completion after Substantial Completion.
4. Transmittal of required Project construction records to the Owner.
5. Removal of surplus materials, rubbish and similar elements.
6. See **Section 01700 – Contract Close-outs** for additional information.

2.03 CHANGE PROCEDURES:

The following items describe the possible Requests for Information, Field Changes, and other subsequent procedures and documentation requirements involving the Work as authorized by AIA A201, 2007 Edition.

A. **Architectural Supplemental Instructions (ASI)** - The Architect may advise of minor changes in the work not involving an adjustment to Contract Sum or Contract Time as authorized by AIA A201, 2007 Edition, Paragraph 7.4 by issuing an **Architectural Supplemental Instructions (ASI) on AIA Form G710**.
B. **Proposal Request** - The Architect may issue a Request for Proposal (RFP) that includes a detailed description of a proposed change with supplementary or revised drawings and specifications. The Contractor shall prepare and submit an itemized quote within 10 working days. All quotes shall include detailed labor and materials costs from all related sub contractors, shall separately itemize the Contractor's overhead and profit, and shall indicate, with explanation, the associated affect on Project Schedule.
1. Note: compensation for extended General Conditions is not considered customary and will be granted solely at the Owner's discretion.
2. RFPs which are returned without full itemization shall be considered to be non-responsive. Delays resulting from the Architect or Owner's subsequent requests for itemization and the time taken to provide same shall be caused solely by the Contractor.

C. The Contractor may propose a change by submitting request for change to the Architect, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the contract sum and contract time with full documentation document any requested substitutions in accordance with Section 01600.
   1. Comply with requirements in Section 01600 – Product Substitutions if the change requires substitution of one product or system for products or systems specified.

D. **Request for Information (RFI)** - The Contractor may submit a Request for Information (RFI) G716, which may generate a change in the Work as detailed by the Architect. All RFI's shall be generated by the General Contractor (or the Construction Manager) who shall coordinate all subcontractors and issue sequentially numbered documents. All RFI's shall provide the Architect with existing field conditions and/or possible resolutions to facilitate a prompt and effective response. It is the Contractor's responsibility to review the field issues, dimensions, conflicts, etc. to provide as much information as possible to the Architect for resolution. The Contractor shall take an active role in resolving these issues with the Architect.

E. **Construction Change Directives (CCD) –** the Architect may issue a directive, **on AIA Form G714 Construction Change Directive (CCD)**, that when signed by the Owner, instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. The Document will describe changes in the Work, and designate method of determining any change in contract sum or contract time. Promptly execute the change when authorized by the Owner. Construction Change Directives may be issued in the field as a "Draft" which allows the Contractor to estimate the Work and/or cost as well as informing the contractor to allow for potential changes being issued.

F. **Time and Material Change Order (T&M – CO) –** It may be allowed by the Owner that Work be completed without a prior Cost Estimate. If allowed - submit itemized accounting and supporting data after completion of change, within time limits indicated in the conditions of the contract. Architect will determine the change allowable in Contract Sum and Contract Time as provided in the Contract Documents.
   1. Any Work done, as agreed to by the Owner/Architect/Contractor on a Time and Material Basis shall set special requirements of the Contractor. Maintain detailed records of work done on time and material (T&M) basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the work.

G. **Change Order Forms (CO)** – The Contractor shall prepare Change Orders, based on approved quotes from RFPs, using the Owner supplied Change Order form. Unless otherwise provided in the Conditions of the Contract, the Contractor shall distribute three signed originals to the Architect for approval and further distribution to the Owner.

2.04 PROVISION FOR ADDITIONAL INFORMATION:

A. Electronic media files (.DWG format) may be available as backgrounds for contractors requiring layout and detailing of Project Document information. These files may be requested of the Project Team by submitting the "***File Request Form"*** following this Section.

B. Only files created by **Mitchell and Mouat Architects** can be guaranteed to be available, but additional Consultant's files may be requested, and availability will be according to the Consultant's provisions and based upon their file format and other considerations.

C. See Specification **Section: 01020 – File Request Form** for **information and fees** associated with the transfer and use of AutoCAD files for Contractor's use.

END OF SECTION 01019

Mitchell and Mouat architects

CAD FILE REQUEST FORM

DATE OF REQUEST: _____

COMPANY: _____

ADDRESS OF COMPANY: _____

Re: Letter of Authorization for CAD File Use for the following Project:
Ann Arbor Parks and Recreation MaMA Project No. **1106**
Veterans Memorial Park Locker Room Renovation

Per your request, Mitchell and Mouat Architects, Inc. will transmit the requested AutoCAD files copied to a CD-ROM or e-mailed, as directed, upon receipt of an original signed copy of this letter with conditions of agreement as stated. ***We can only guarantee electronic files in .DWG format for the Architectural portion of the Project and can not be responsible for Consultant's .DWG files****.*

1. *By acceptance it is understood and agreed that the data and medium being supplied is to be used only for the project referenced.*
2. *It is further understood and agreed that the undersigned will hold Mitchell and Mouat Architects harmless and indemnify Mitchell and Mouat Architects from all claims, liabilities, losses, etc., including attorney's fees, arising out of the use, misuse, or misinterpretation of the requested files.*
3. *It is understood and agreed that the files transmitted are prepared from AutoCAD files, saved in a .dwg format current at the time of preparation. All files are AutoCAD LT v.2007 or later.*
4. *This information does not waive the responsibility of the Requester to review and verify all actual field conditions.*
5. *When a requested AutoCAD file is used for the purpose of preparing Shop Drawing Submittals, discrepancies between the information contained in the file and actual field conditions are to be clearly highlighted in the Shop Drawing Submittals. Use of these files for Shop Drawing Submittals without prior field verification is not acceptable. (Note: the status of Addenda and/or Bulletin documentation shall also be included in the Shop Drawing Submittals.)*
6. *As a record of information to be transmitted, Mitchell and Mouat Architects will prepare a duplicate back-up for our files, which may be electronic or hard-copy.*
7. *Compensation for providing this material will be as follows: Base Fee of $150 for 1 to 3 sheets and a Base Fee of $250 for 4 to 10 sheets; for each additional sheet after 10 the fee is $25.00 per sheet (i.e., 11 sheets = $275). Payment must be provided along with a signed copy of this form before files will be released. Please remit to Mitchell and Mouat and allow five working days for processing.*

Bid Pack No. :_____ **Sheets Requested**:_____

Signed:_____ Fee: _____

Printed Name/Title: _____ Phone: _____ Fax: _____

E-mail address: _____

Released (signed by):_____ Mitchell and Mouat Architects, Inc.

Printed Name/Title: _____ Date_____

113 South Fourth Avenue, Ann Arbor, Michigan 48104 PH 734-662-6070 FAX 734-662-3802 MaMA@MitchellandMouat.com

SECTION 01031 - ALTERATIONS OF EXISTING WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to the work of this section.

1.02 DESCRIPTION OF REQUIREMENTS

B. Removals:
   1. Removals shall be as indicated and as specified herein and in other sections of these Specifications and shall be performed in a neat and workmanlike manner to limits indicated or specified or to minimum extent necessary or required for proper installation of new work. Existing surfaces remaining after removals to which new work is to be applied shall be left in a condition suitable for application of new work.
   2. Removals shall be performed without damage to adjacent retained work; however, where such work is damaged, Contractor shall patch, repair or otherwise restore same to its original or better condition in terms of performance characteristics and visual effect.
   3. All existing materials, fixtures, and equipment which have been removed or disconnected, but which are not indicated or specified for reuse in new work or called for to be turned over to Owner shall become property of Contractor and shall be removed from site by Contractor at his expense and legally disposed of. On-site storage or sale of salvaged items not designated for Owner reuse will not be permitted.

C. Debris:
   1. Debris shall be placed in approved containers to prevent the spread and accumulation of dust and dirt. Debris shall be removed from the area of work as often as necessary, but not less than at least once at end of each work day. All such debris shall be removed from site by Contractor and legally disposed of.
   2. Construction areas, interior and exterior, must be kept in a neat and orderly fashion. Contractor shall interpret "neat and orderly" to be in excess of that which is the normal construction industry practice. Trash, debris and all unusable items must be removed from the site daily. Removal must be supervised.

D. Protection:
   1. Contractor shall take all necessary precautions to adequately protect personnel and public and private property in the areas of work. Approved barriers and warning signs shall be provided to reroute personnel around areas of dangerous work.

E. Dust Control:
   1. Dust resulting from removals shall be controlled so as to prevent its spread to occupied portions of the building and to avoid creation of a nuisance in surrounding areas. Existing spaces occupied by Owner's personnel shall be isolated from removal operations by means of temporary dust-tight barriers. Dust seals shall be installed on doors entering spaces of human occupancy. Gaskets or other means may be used provided whatever method is used will not impede the use of these exits in any manner during an emergency.

F. Access to Site and Buildings:
   1. The premises will be occupied during part of the period of alteration and renovation work. Contractor shall not restrict access to building or site by employees, students, delivery operations, etc. Contractor **shall provide covered access to building** for protection of the public, employees and for services vehicles, as may be required. Such protection devices shall comply with all governing authorities having jurisdiction.

1.03 INCONSISTENCIES:

A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of any Specification, or between the Drawings and Specifications, the Contractor's Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 REMOVALS

A. General:
   1. See Drawings for notes, schedules, details, plans, etc. and see other Sections of these specifications to establish full extent of removal work required.

B. Masonry Walls and Portions of Masonry Walls for New Openings:
   1. Materials and methods required to safely support and prevent any displacement or distress of masonry walls and structural elements during removal of existing masonry walls or portions of existing masonry walls for new openings shall be responsibility of Contractor. Any damages incurred by displacement or distress of walls or structural elements shall be repaired to as new condition by the Contractor at no additional cost to the Owner.

3.02 RELOCATIONS

A. General:
   1. See Drawings for notes, schedules, details, plans, etc, and see other sections of these specifications to establish full extent of work required.

3.03 DUST PARTITIONS

A. These are temporary walls to keep dust from entering occupied areas during construction operations. Construct required dust partitions in compliance with UL Design No. U305 and with the following:
   1. Pack safing insulation tightly around all conduits, pipes, ducts and other obstructions passing through the partitions.
   2. Where partition will be exposed to weather, paint side exposed to the weather.
   3. Install fiberglass sill sealer between sole plate and floor, between top plate and ceiling or structural framing system and between studs and abutting vertical surfaces of wall, columns, etc.

B. Repair and damage to existing work caused by erection and removal of temporary dust partitions. Repair to match adjacent existing surfaces to satisfaction of Architect.

3.04 PATCHING

A. Where removals leave holes or otherwise damaged surfaces that will be exposed in the finished work, these holes and damaged surfaces shall be patched and repaired with materials and by methods which will result in equal or better work than the work being patched, both in performance characteristics and visual affect. Where work is to be applied to existing surfaces, removals and patching shall produce surfaces that are suitable for the provision of the new work. Patching shall be performed by workmen skilled in the trade involved and shall be performed in a neat and workmanlike manner. Finished surfaces of patched area shall match the existing adjacent surfaces as closely as possible as to texture and finish.
   1. See Section 01045 for additional requirements.

END OF SECTION 01031

SECTION 01039 – PROJECT COORDINATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General Conditions and Division 1 Specification sections, apply to the work of this section.

1.02 DESCRIPTION OF REQUIREMENTS

A. The following are the responsibilities of the Contractor during construction.
B. It is the responsibilities of the General Contractor to determine the best pathway for material installations based on the Owner's use of the premises and to schedule the appropriate trades to minimize the interferences and to make all systems and installations come together in the allowed space. See below for additional information.

1.03 SECTION INCLUDES:

A. Contractor's responsibility to Coordinate and Schedule Inspections
B. Coordination Responsibilities
C. Alteration Project Procedures
D. Administrative and supervisory personnel.
E. General installation provisions.

1.04 RELATED SECTIONS:

A. Section 01010 – Summary of Work
B. Section 01019 – Contract Considerations
C. Section 01120 – Project Alteration Procedures
D. Section 01200 – Project Meetings
E. Section 01300 – Submittals
F. Section 01400 – Field Engineering and Quality Control Services
G. Section -1500 – Construction Facilities and Temporary Controls
H. Section 01600 – Product Substitutions
I. Section 01700 – Contract Close-out

PART 2- PROJECT COORDINATION RESPONSIBILITY:

2.01 FIELD COORDINATION OF TESTING AND AGENCY INSPECTIONS;

A. It is the Contractor's responsibility to coordinate and schedule all testing and sampling required of the Work and Contract Documents.
B. It is the Contractor's responsibility to coordinate and schedule the appropriate Review Agency inspections as required by the Work.
C. Determine construction schedule and inform the Architect and Owner of required inspections and time periods.
    1. Verify the number of inspections required and when in the construction process inspections shall be made.
    2. Coordinate with Architect for requirements of Inspection Applications per Agency requirements.
    3. Some Agencies may require that the Architect submit Inspection Application requests. Notify the Architect in writing when such a Inspection Application request should be made on the project's behalf.
D. Inform the Architect and Owner of scheduled inspections at least 3 days in advance for their participation as required.

2.02 COORDINATION RESPONSIBILITIES:

A. The work of Mechanical, Electrical, Plumbing, etc. trades is indicated diagrammatically on the drawings. It is the responsibility of the General Contractor to address the installation of this equipment in a 3-dimensional space and schedule the sequence of installations to allow all parts to fit according to the concept of the Documents.

B. Organize, coordinate, and direct the installation of listed building elements involved in the work of Mechanical, Electrical, Plumbing, Fire Suppression, Security, etc. trades, including all required clearances. The contractor shall be responsible for the layout and coordination between elements of each of these trades and all other architectural components so that all will fit within the available interstitial spaces, chases, shafts, etc.
   1. Prepare and submit coordination drawings indicating the work of Mechanical, Electrical, Plumbing, etc. trades and any required access panels.
   2. Pay special attention to avoid conflicts between architectural layout of lighting, diffusers, etc. (visible, architecturally coordinated items) and other elements installed in available interstitial spaces, chases, shafts, etc.
   3. Coordinate locations of all access panels with Architect prior to finishes being applied.
   4. Schedule activities in the sequence required to obtain the best results, and in keeping with the intent of the documents. Do not allow one trade to “force out” of proper alignment, fit or coordination based on lack of scheduling.
   5. Where space is limited, coordinate installation of different components to assure maximum accessibility for maintenance, service and repair.
   6. Make provisions to accommodate items scheduled for later installation.
   7. Distribute memoranda to each trade involved outlining required coordination procedures. Include required notices, reports and attendance at meetings.
      a. Prepare similar memoranda for the Owner and the Owner’s separate Contractors where coordination of their Work is required.
   8. Coordinate administrative procedures with other activities to avoid conflicts and ensure orderly progress. Such activities include:
      a. Preparation of schedules.
      b. Installation and removal of temporary facilities.
      c. Delivery and processing of submittals.
      d. Progress meetings.
      e. Project closeout activities.
   9. Verify locations with future work and Code requirements.

C. Follow routing shown for pipes, ducts, conduit, etc, as closely as practicable. Place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

D. Any conflicts shall be brought to the attention of the Architect prior to installation of any element, or they become the responsibility of the contractor who must then eliminate any conflicts to the satisfaction of the Architect.

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

F. Verify that rated floor, wall or ceiling assemblies, as referenced by UL or other Standards, are installed in accordance with referenced standard, including structural, mechanical and electrical components of referenced assembly. Coordinate installation of referenced assembly components with all affected trades.

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

H. Coordinate completion and clean up of work of separate sections in preparation for substantial completion and for portions of work designated for Owner’s partial occupancy.

I. 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.

2.03 ALTERATION PROJECT COORDINATION AND PROCEDURES:

A. See Section 01120 – Project Alteration Procedures for additional requirements associated with demolition and separations of Work in the scope of the Project.
B. The Contractor is responsible for complying with the above requirements as required by the particular Scope of Work herein described.

2.04 ADMINISTRATIVE AND SUPERVISORY PERSONNEL AND RESPONSIBILITIES:

A. Staff Names: Within 15 days of Notice to Proceed, submit a list of Contractor's staff assignments, including Superintendent and personnel at the site; identify individuals, their duties and responsibilities, addresses and telephone numbers.
   1. Post copies in the Project meeting room, the field office, and at each temporary telephone.
   2. The Owner and Architect shall be informed in writing of changes to supervisory staff positions, responsibilities or management changes.
B. It is the sole responsibility of the Contractor's representative to keep all Documents, Schedules and Approvals in an orderly fashion and available at the Project Site.
C. All Documents originating at the office of the Architect shall be available to the Owner and Architect for reference as needed during the progress of the Project.

PART 3- GENERAL INSTALLATION PROVISIONS:

3.01 INSPECTION OF CONDITIONS:

A. The Installer/Contractor of each component shall inspect the substrate and conditions under which Work is performed and by continuation, accept previous conditions. Do not proceed until unsatisfactory conditions have been corrected.
B. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints to obtain the best effect. Refer questionable choices to the Architect for decision.
C. Recheck measurements and dimensions, before starting installation.
D. Install each component during weather conditions and project status that will ensure the best results. Isolate each part from incompatible material as necessary to prevent deterioration.
E. Coordinate temporary enclosures with inspections and tests, to minimize uncovering completed construction for that purpose.

3.02 MOUNTING HEIGHTS:

A. Where mounting heights of equipment are not specifically indicated, install components at standard heights for the application indicated. Refer to Typical Barrier-Free Mounting Heights Detail in Documents, and refer any questionable decisions to the Architect. Any conditions affecting accessibility of Public areas shall default to the Michigan Building Code and referenced ANSI 117.1 requirements – which shall be strictly followed.

3.03 LIMITING EXPOSURES:

A. Supervise operations to ensure that no part of construction, completed or in progress, is subject to harmful or deleterious exposure. Such exposures include:
   1. Excessive static or dynamic loading.
   2. Excessive internal or external pressures.
   3. Excessive weathering.
   4. Excessively high or low temperatures or humidity.
   5. Air contamination or pollution.
   6. Water or ice.
   7. Chemicals or solvents.
   8. Heavy traffic, soiling, staining and corrosion.
   9. Rodent and insect infestation.
   10. Unusual wear or other misuse.
   11. Contact between incompatible materials.
   12. Theft or vandalism.

END OF SECTION 01039

SECTION 01045 - CUTTING AND PATCHING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION OF REQUIREMENTS

A. "Cutting and Patching" is hereby defined to include, but is not necessarily limited to, the cutting and patching of nominally completed and/or previously existing work, in order to: accommodate the coordination of work; or the installation of other work; or to uncover other work for access or inspection; or to obtain samples for testing; or for similar purposes; and is defined to exclude integral cutting and patching during the manufacturing, fabricating, erecting and installing process for individual units of work. Drilling the work to install fasteners and similar operation are excluded from the definition of cutting and patching, but may have similar requirements.
   1. Alteration work as specified for existing work in order to accomplish revisions or to accommodate new work is specified separately, and may require cutting and patching but is not specified primarily as cutting and patching work.
   2. Excavating and associated operations of boulder removal, dewatering, shoring and bracing, removal of underground debris, penetration of rock and other barriers, backfilling, and similar work may be required as special forms of cutting and patching, but are recognized primarily as examples of related but separate categories of work not specified in this section.
   3. Restoring or removing and replacing non-complying work is specified separately from cutting and patching, but may require cutting and patching operations as specified herein.

B. Refer to other sections of these Specifications, including Divisions 15 and 16, for additional cutting and patching requirements and limitations applicable to individual parts of the Work. None the less, no other reference to ‘Cutting and Patching’ herein included shall exclude or modify the fact that the required Work shall be done by tradesmen skilled in dealing with the particular material/installation requiring the Work.

1.03 INCONSISTENCIES:

A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of any Specification, or between the Drawings and Specifications, the Contractor’s Bid amount shall reflect the most costly version or combination of the requirement(s).

1.04 QUALITY ASSURANCE

A. The Contractor is responsible to maintain all systems/structures required for the continuation, reuse or future use of the system/structure, as inferred by the Documents. Failure to coordinate these elements during ‘cutting and patching’ will not relieve the contractor from the responsibility and cost of repairing to acceptable use.

B. Requirements for Structural Work:
   1. Do not cut and patch structural work in a manner resulting in a reduction of load carrying capacity or load/deflection ratio.
   2. Prior to cutting and patching the following categories of work, obtain Architect's/Engineer's approval to proceed.
      a. Major structural members including trusses, beams and columns.
      b. Miscellaneous structural members, including lintels, equipment supports and similar categories or work.
      c. Bearing walls.

C. Operational and Safety Limitations:

1. Do not cut and patch operational elements or safety related components in a manner other than intended (including energy performance), in decreased operational life, in increased maintenance, or in decreased safety.
2. Prior to cutting and patching the following categories of work and similar categories where directed, obtain Architect's/Engineer's approval to proceed with cutting and patching as proposed in submittal by Contractor:
   a. Primary operational systems and equipment
   b. Control, communication, conveying, and electrical wiring systems

D. Visual Requirements:
1. Do not cut and patch work exposed on the building's exterior or in the building's occupied spaces in a manner that would, in the Architect's opinion, result in lessening the building's aesthetic qualities. Do not cut and patch work in a manner that would result in substantial visual evidence of cut and patch work. Remove and replace work judged by the Architect to be cut and patched in a visually unsatisfactory manner.

1.05 SUBMITTALS:

A. Proposals for Cutting and Patching: Where prior approval of cutting and patching is required, submit proposal well in advance of time work will be performed, and request approval to proceed. Include the following information, as applicable, in the proposal:
1. Describe the nature of the work and how it is to be performed, indicating why cutting and patching is called for. Describe anticipated results of the work in terms of changes to existing work. Where applicable, include cost proposal and suggested alternatives to proposed cutting and patching procedure.
2. List products to be used and firms/tradesmen to perform the work.
3. Provide dates when work is expected to be performed.
4. List utilities that will be disturbed or otherwise be affected by the work, including those that will be relocated and those that will be out of service temporarily. Indicate how long utility service will be disrupted.
5. Where cutting and patching of structural work involves major structural members including trusses, beams and columns; miscellaneous structural members, including lintels, equipment supports and similar categories or work; bearing walls or the addition of or removal of reinforcement; submit details and engineering calculations to show how the cutting and patching is integrated with original structure to satisfy requirements.
6. Architect's approval of cutting and patching work proposal does not waive the Architect's right to require subsequent complete removal and replacement of work found to be cut and patched in an unsatisfactory manner.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. General: Except as otherwise indicated, or as directed by the Architect, use materials for cutting and patching that are identical to existing materials. If identical materials are not available, or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials for cutting and patching that will result in equal-or-better performance characteristics.
1. Obtain approval of the Architect before using materials other than original for patching, unless indicated otherwise.

PART 3 - EXECUTION

3.01 INSPECTION:

A. Before cutting, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding if unsafe or unsatisfactory conditions are encountered.

B. Pre-Cutting and Patching Coordination Meeting: Before the start of cutting work, meet at the work site with all parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict between the various trades. Coordinate layout of the work and resolve potential conflicts before proceeding with the work.

3.02 PREPARATION:

A. Temporary Support:
   1. Provide adequate temporary support for work to be cut to prevent any form of structural failure. Do not endanger other work. It is the contractor's responsibility to have a qualified Engineer review/approve all shoring required to maintain the existing construction.

B. Protection:
   1. Provide adequate protection of other work and existing construction during cutting and patching to prevent damage. Provide protection of the work from adverse weather exposure.
   2. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
   3. Take all precautions to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.02 PERFORMANCE:

A. General: Employ skilled trades people to perform cutting and patching. Except as otherwise indicted or approved by Architect/Engineer, proceed with cutting and patching at earliest feasible time in each instance, and complete work without delay.

B. Cutting:
   1. Cut work/existing construction by methods least likely to damage work/existing construction to be retained and work/existing construction adjoining. Review proposed procedure with original installer where possible, and comply with their recommendations.
   2. In general, where physical cutting action is required, cut work with sawing and grinding tools, not with hammering and chopping tools. Cut holes and slots to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces. Coordinate with other Sections of these Specifications for specialized cutting relative to particular material and installations.
   3. Cut through concrete and masonry using a cutting machine such as a carborundum saw or a diamond core drill, unless required to tooth in other Sections of the Documents.
   4. Comply with requirements of applicable sections of Division 2 where cutting and patching requires excavating and backfilling.
   5. Before cutting, by-pass utility services such as pipe or conduit where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

C. Patching:
   1. Patch with seams that are durable and as invisible as possible. Comply with specified tolerances for the Work.
   2. Where feasible, inspect and test patched areas to demonstrate integrity of installation.
   3. Restore exposed finishes of patched areas; extend, where necessary, finish restoration to retained adjoining work/existing construction in a manner that will eliminate evidence of patching and refinishing.
      a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch, after the patched area has received primer and second coat.
   4. Patch, repair or re-hang existing ceilings to remain as necessary to provide an even plane surface of uniform appearance.

D. Cleaning:
   1. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit and similar features before painting or finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION 01045

SECTION 01200 - PROJECT MEETINGS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS:
- A. Drawings and general provisions of Contract, including General Conditions and Division 1 Specification sections, apply to the work of this section.

1.02 SECTION INCLUDES:
- A. Preconstruction conference
- B. Site mobilization conference
- C. Progress meetings
- D. Special installation Meetings
- E. Intermediate and Final Inspections by Governing Agencies

1.03 RELATED SECTIONS:
- A. Section 01019 - Contract Considerations
- B. Section 01039 - Project Coordination
- C. Section 01400 - Field Engineering and Quality Control Services
- D. Section 01700 - Contract Closeout

1.04 CONTRACTOR RESPONSIBILITIES:
- A. It is the responsibility of the Contractor to:
  1. Coordinate with the required subcontractors for their availability
  2. Provide a location or venue for each meeting.

1.05 PRE-CONSTRUCTION CONFERENCE:
- A. Owner/Architect will schedule a conference after Notice of Award and prior to start of construction activities.
- B. Attendance Required: Owner, Architect/Engineer and their consultants, Contractor's Superintendent, subcontractor's superintendent, and, optionally - any other suppliers, manufacturers, and other concerned parties shall be represented by persons authorized to conclude matters relating to the Work.
- C. Typical 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. Review list of products, Schedule of Values, and progress schedule.
  5. Designation of personnel representing the parties in contract and the Architect.
  6. Procedures and processing of field decisions, submittals, substitutions, applications, Applications for Payments, proposal requests, Change Orders and contract closeout procedures.
  7. Scheduling and work sequence.
  8. Submission of submittal schedule.
- D. The Contractor shall prepare resolutions to a number of Agenda items noted above for discussion during the Pre-Construction Meeting.

1.06 SITE MOBILIZATION CONFERENCE:

A. Owner will schedule a conference at the project site prior to contractor occupancy or include as part of the Pre-Construction Meeting.
B. Attendance required: Owner, Architect/Engineer, Contractor, Contractor's superintendent, and Electrical and Mechanical Contractors.
C. Typical Agenda:
   1. Use of premises by Owner and Contractor.
   2. Owner's requirements and continued occupancy.
   3. Construction facilities and controls provided by Contractor.
   4. Temporary utilities provided by owner.
   5. Survey and building addition layout.
   6. Security and housekeeping procedures.
   7. Schedules
   8. Procedures for testing.
   9. Procedures for maintaining record documents.
   10. Requirements for start-up of equipment.
   11. Inspection and acceptance of equipment put into service during construction period.
D. The Contractor shall prepare resolutions to a number of Agenda items noted above for discussion during the Pre-Construction Meeting.

1.07 PROGRESS MEETINGS:

A. Architect will schedule and administer meetings throughout progress of work at minimum of once-per-week intervals.
   1. Attendance required: Job superintendent, major subcontractors and suppliers, Owner and Architect as appropriate to agenda topics for each meeting.
B. Typical Agenda: Review minutes of the previous Progress Meeting. Review significant items that could affect progress. Include topics appropriate to the current status of the Project including, but not limited to:
   1. Review minutes of previous meetings.
   2. Review of work progress.
   3. Field observations, problems, and decisions.
   4. Identification of problems that 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. Review documentation for future payment requests.
   14. Other business relating to work.
C. Construction Schedule: Review progress since last meeting. Determine where each activity is in relation to the Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
   1. Review the present and future needs of each entity present, including such items as:
      a. Time.
      b. Sequences.
      c. Deliveries.
      d. Shop Drawing Logs
      e. Off-site fabrication problems.
      f. Site utilization.
      g. Temporary facilities and services.

h. Quality and work standards.
i. Change Orders.

1.08 SPECIAL INSTALLATION MEETINGS:

A. Pre-installation meeting: Conduct a meeting before each activity that requires special coordination with other construction. The installer and representative of manufacturers and fabricators involved in the installation, and coordination or integration with other materials and installations that have preceded or will follow shall attend. Advise the Architect/Engineer of scheduled meeting dates four days in advance.
   1. Review progress of other activities and preparations for the activities under consideration at each conference, including time schedules, manufacturer's recommendations, weather limitations, substrate acceptability, compatibility problems and inspection and testing requirements.
   2. Record proceedings of each meeting, along with the approved schedule. Promptly distribute the meeting record to everyone concerned, including the Owner and Architect/Engineer.
   3. Do not proceed if the meeting cannot be successfully concluded. Resolve impediments and reconvene the meeting at the earliest feasible date.

B. Inspection of Conditions: The Installer of each component shall inspect the substrate and conditions under which Work is performed. The Installer shall report all unsatisfactory conditions in writing to the Contractor. Do not proceed with the Work until unsatisfactory conditions have been corrected.

C. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that they are more stringent than requirements in the Contract Documents.

D. Inspection of Material: Inspect material immediately upon delivery and again prior to installation. Reject damaged and defective items.

E. Provide attachment and connection devices and methods necessary for securing each construction element. Secure each construction element true to line and level, and within recognized industry tolerances. Allow for expansion and building movement.

F. Visual Effect: Provide uniform joint widths in exposed Work. Arrange joints to obtain the best visual effect. Refer questionable choices to the Architect/Engineer for final decision.

G. Recheck measurements and dimensions of the Work before starting installation.

H. Install each component during weather conditions and project status that will ensure the best possible results in coordination with the entire Work. Isolate incompatible work and materials as necessary to prevent deterioration.

I. Coordinate temporary enclosures with inspections and tests, to minimize uncovering completed construction for that purpose.

J. Mounting Heights: Where mounting heights are not indicated, install components at industry recognized standard heights for the application indicated. Refer questionable mounting height choices to Architect/Engineer for final decision.

END OF SECTION 01200

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Construction progress schedules.
B. Product Submittal Procedures and Schedules.
C. Shop Drawings.
D. Dimensions
E. Proposed Products list.
F. Samples.
G. Manufacturers' instructions.
H. Manufacturers' certificates.

1.02 RELATED SECTIONS:

A. Section 01019 - Contract Considerations: Schedule of Values.
B. Section 01039 - Project Coordination.
C. Section 01600 - Material and Equipment: For Product substitutions.
D. Section 01700 - Contract Closeout: Contract warranty and manufacturer's certificates and closeout submittals.

1.03 CONSTRUCTION PROGRESS SCHEDULES:

A. Submit initial progress schedule in duplicate within 15 days after date of Owner-Contractor Agreement for Architect review.
B. Revise and resubmit as required.
C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
D. Submit a horizontal bar chart with a separate line for each major section of work or operation, identifying first workday of each week.
E. Show complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
F. Indicate estimated percentage of completion for each item of work at each submission.
G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and under allowances.
H. Indicate key dates for coordination of vacation of contract limits, removal of existing building components designated as the responsibility of the Owner, and other milestones affecting construction progress which require coordination with the Owner's operation.

1.04 PRODUCT/SHOP DRAWING SUBMITTAL PROCEDURES:

A. Prepare Submittal and Shop Drawing Schedule and submit to the Architect/Engineer for review within 15 days after date of Owner-Contractor Agreement. Schedule shall include a tabular breakdown, by specification Section, of all required submittals as listed in each Section, the anticipated submittal date of each item, and when return is required in order to meet construction schedules.
B. Allow a minimum of ten (10) working days for Architect/Engineer review of submittals.
C. Transmit each submittal with AIA Form G810, or Contractor's standard transmittal form as acceptable to Architect.
    1. Transmit the Submittal/Product sample directly to the responsible party. Example - If the submittals are Mechanical, send directly to the Mechanical Engineer with a copy transmitted to the Architect for their record/file. This procedure shall by similar for all other consulting parties. Subsequently, the Engineer shall transmit all reviewed Submittals to the Architect for their review/comment and final transmittal to the Contractor. This shall be the normal procedure for all Product Submittals. Coordinate with the Architect for products that do not have a clearly defined responsibility.

2. Submit two (2) copies of each shop drawing submitted, plus one original that will be used as a master to be copied and distributed by the Contractor to all pertinent parties. The Contractor shall be responsible for duplications so that the Architect/Engineer/Owner have appropriate information.
3. Electronic files are preferred for Shop Drawing Review Submittals.
   a. Submit an electronic file in the form of a .PDF.
   b. If the particular Shop Drawing is the responsibility of an Architect's consultant, transmit to consultant and simultaneously to the Architect for record.
   c. Transmit an electronic copy of a transmittal with all information similar to AIA G810.
   d. The contractor shall have "stamped and noted" all of his responsibilities on the electronic version of the document.
   e. The Architect will make all notes, comments and stamps electronically in the .PDF file.
   f. The Contractor shall receive and subsequently transmit to appropriate subcontractors the Shop Drawings in paper or electronic form as required.

D. Sequentially number the transmittal forms. Resubmittals to have original number with an alphabetic suffix.
   1. Revise and resubmit submittals as required, identify all changes made since previous submittal. Renumber the subsequent submittals accordingly.
E. Identify project, Contractor, subcontractor or supplier; pertinent drawing sheet and detail number(s), and specification Section number, as appropriate.
F. Apply Contractor's stamp, signed or initialed, certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information, is in accordance with the requirements of the work and Contract Documents. Submittals not Approved and stamped by the Contractor prior to delivery to the Architect shall be returned unreviewed.
G. Schedule submittals to expedite the project, and deliver to the appropriate business address. As agreed to by the Architect/Contractor – send Review copies directly to the Engineer and a transmittal/record copy to the Architect. Coordinate submission of related items.
H. Provide space for Contractor and Architect/Engineer review stamps.
I. Identify variations from contract documents and product or system limitations that may be detrimental to successful performance of the completed work.
J. Distribute copies of reviewed submittals to concerned subcontractors/Owner. Instruct parties to promptly report any inability to comply with provisions.

1.05 SHOP DRAWINGS RESPONSIBILITIES:

A. The Architect is limited in responsibility of Shop Drawing Review as stated in AIA Document A201-2007 – General Conditions of the Contract for Construction, as herein stated, and referenced elsewhere in these Specifications.
B. The Architect will not accept Shop Drawings unless properly reviewed by the sub-contractor/supplier and the General Contractor/Construction Manager. The Architect is responsible for design concept as expressed in the Contract Documents. The Contractors are responsible for installation means and integration into other work of the Project. The Architect will not review submitted Shop Drawings unless the Contractor has Approved and stamped each submittal, and noted their responsibility to 'Field Verify' dimensions where applicable, prior to submission to the Architect.
C. Refer to Section 01600 – Product Substitutions for proper procedures regarding Substitution Requests.
D. Prior to and after review, reproduce and distribute in accordance with Article on Product Submittal Procedures noted above and for Record Documents described in Section 01700 - Contract Closeout.

1.06 DIMENSIONS:

A. The Contractor shall be solely responsible to field measure project conditions prior to submitting Shop Drawings and shall be solely responsible to ensure that dimensions noted on Shop Drawings will be properly accommodated by related construction that takes place after Shop Drawings have been approved.
B. Any dimensions noted by the Architect on any Shop Drawings shall be determined to be a requirement of the particular detail or installation and shall be coordinated with Field Conditions by the Contractor to be sure that all dimensions and material fit. Any required changes shall be noted to the Architect immediately.
C. The Architect shall not be requested to fill in dimensions that should be associated with Field Conditions. This is the responsibility of the Contractor.

1.07 PROPOSED PRODUCTS LIST:

A. Within 15 days after date of Owner-Contractor Agreement, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.08 SAMPLES:

A. Submit samples to illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
B. Submit samples of finish from the full range of manufacturers' standard colors (unless noted otherwise in individual section), textures, and patterns for Architect's selection.
C. Include identification on each sample, with full project information.
D. Submit the number or samples specified in individual specification sections; one of which will be retained by Architect/Engineer.
E. Reviewed samples that may be used in the work are indicated in individual specification sections.

1.09 MANUFACTURER'S INSTRUCTIONS:

A. When specified in individual specification sections, submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for product data.
B. The Contractor shall identify conflicts between manufacturer's instructions and contract documents.

1.10 MANUFACTURER'S CERTIFICATES:

A. When specified in individual specification sections, submit manufacturer's certificate to Architect for review, in quantities specified for product data.
B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
C. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

END OF SECTION 01300

SECTION 01400 – FIELD ENGINEERING AND QUALITY CONTROL SERVICES

PART 1 – GENERAL

1.01 SECTIONS INCLUDE:
- A. Requirements for Field Engineering
- B. Quality Assurance and Control of Installation
- C. Field Samples
- D. Contractor's Responsibilities for Inspections
- E. Inspection and Testing Laboratory Services
- F. Manufacturer's Field Services and Reports

1.02 RELATED SECTIONS:
- A. Section 01090 - Reference Standards.
- B. Section 01300 - Submittals: Submission of Manufacturer's instructions and certificates.
- C. Section 01610 - Material and Equipment: Requirements for material and product quality.
- D. Section 01039 – Project Coordination

PART 2 – FIELD ENGINEERING AND RESPONSIBILITIES

2.01 SUMMARY - REQUIREMENTS FOR FIELD ENGINEERING:
- A. This Section specifies requirements for field engineering.
- B. Certificates: Submit/coordinate a certificate signed by the Land Surveyor certifying that the location and elevation of improvements comply with Contract Documents.
- C. Surveyor: Engage a Land Surveyor registered in the State where the Project is located, to perform land surveying required.
- D. Examination: The Owner will assist in identifying existing control points and property line corner stakes.
- E. Verify layout information shown on the Drawings, in relation to the property survey and existing benchmarks before proceeding to layout the Work. Protect existing benchmarks and control points. Preserve permanent reference points during construction.
  1. Do not change or relocate benchmarks or control points without prior written approval. Report lost or destroyed reference points, or requirements to relocate reference points because of necessary changes in grades or locations.
  2. Promptly replace lost or destroyed project control points. Base replacements on the original survey control points.
- F. referenced to data established by survey control points.
  1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
- G. Existing utilities and equipment: The existence and location of underground utilities and construction indicated as existing are not guaranteed. Before beginning sitework, verify the existence and location of underground utilities and other construction.
  1. Prior to construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer and water service piping.
- H. Performance: Working from lines and levels established by the property survey, establish benchmarks and markers to set lines and levels at each story of construction and where needed to properly locate each element. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale Drawings to determine dimensions.
  1. Advise entities engaged in construction activities, of marked lines and levels provided for their use.
  2. As construction proceeds, check every major element for line, level and plumb.
- I. Surveyor's Log: Maintain a surveyor's log of control and other surveys. Make this log available for reference.

1. Record deviations from required lines and levels. Advise the Architect when deviations that exceed indicated or recognized tolerances are detected. On record Drawings, record deviations that are accepted and not corrected.
2. On completion of foundation walls, major site improvements, and other construction requiring field engineering services, prepare a certified survey showing dimensions, locations, angles and elevations of construction and site Work.

J. Site Improvements: Locate and lay out site improvements, including pavements, stakes for grading, fill and topsoil placement, utility slopes and invert elevations by instrumentation and similar appropriate means.

K. Building Lines and Levels: Locate and lay out batter boards/control points for structures, building foundations, column grids and locations, floor levels and control lines and levels required for mechanical and electrical Work.

L. Existing Utilities: Furnish information necessary to adjust, move or relocate existing structures, utility poles, lines, services or other appurtenances located in, or affected by construction. Coordinate with local authorities having jurisdiction.

M. Final Property Survey: Before Substantial Completion, prepare a final property survey showing significant features for the Project. Include a certification, signed by the Surveyor, to the effect that metes, bounds, lines and levels of the Project are accurately positioned as shown on the survey.
1. Recording: At Substantial Completion, have the final survey recorded by or with local authorities as the official "property survey".
2. Project Record Documents: Submit a record of Work performed and record survey data required under provisions of Sections "Submittals" and "Project Closeout".

2.02 QUALITY ASSURANCE/CONTROL OF INSTALLATION:

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply fully with manufacturer's instructions, including each step in sequence.

C. Should manufacturer's instructions conflict with contract documents, request clarification from Architect/Engineer before proceeding. Refer to ‘Request for Information’ forms herein attached.

D. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality and by trades normally associated with the work. Example: All cutting and patching will be performed by tradesmen skilled in the application/material of the individual task.

F. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

2.03 FIELD SAMPLES:

A. Install field samples at the site as required by individual specifications sections for review.

B. Acceptable samples represent a quality level for the work.

C. Where field sample is specified in individual sections to be removed, clear area after field sample has been accepted by Architect.

PART 3 – INSPECTION REQUIREMENTS

3.01 CONTRACTOR RESPONSIBILITIES FOR INSPECTIONS:

A. Provide inspections and tests specified or required by governing authorities, except where they are specifically noted to be the Owner's responsibility, or are provided by another entity. Services shall include those specified to be performed by an independent agency - not by the Contractor.
1. Employ an independent agency to perform Quality Control Services.

2. The Owner will engage and pay for services of an independent agency to perform inspections and tests specified as the Owner's responsibility.

B. Where the Owner has engaged an agency for testing and inspecting part of the Work, and the Contractor is also required to engage an entity for the same element, the Contractor shall not employ the entity engaged by the Owner, unless otherwise agreed in writing with the Owner.
   1. Retesting: The Contractor is responsible for retesting where results prove unsatisfactory and do not indicate compliance with Contract Documents, regardless of whether the original test was the Contractor's responsibility.
      a. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.
   2. Associated Services: The Contractor shall cooperate with agencies performing inspections or tests and provide auxiliary services as requested. Notify the agency in advance of operations to permit assignment of personnel. Auxiliary services include but are not limited to:
      a. Provide access to the Work and furnish incidental labor and facilities necessary to facilitate inspections and tests.
      b. Take representative samples of materials that require testing or assist the agency in taking samples.
      c. Provide facilities for storage and curing of samples, and deliver samples to testing laboratories.
      d. Provide a preliminary design mix proposed for use for material mixes that require control by the testing agency.
      e. Provide security and protection of samples and test equipment at the Project site.

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

3.02 MANUFACTURERS' FIELD SERVICES AND REPORTS:

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and as applicable and to initiate instructions when necessary.

B. Individuals to report observations and site decisions or instruction given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.

C. Submit report within 30 days of observation to Architect for review.

END OF SECTION 01400

SECTION 01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES:
- A. Temporary Utilities: Electricity, lighting, heat, ventilation, telephone service, water and sanitary facilities.
- B. Temporary Controls: Barriers, enclosures and fencing, protection of the work and water control.
- C. Construction Facilities: Site access, parking, progress cleaning, project signage, and temporary buildings.

1.02 RELATED SECTIONS:
- A. Section 01010 – Summary of Work
- B. Section 01019 – Contract Considerations
- C. Section 01039 – Project Coordination
- D. Section 01200 – Project Meetings

1.03 TEMPORARY ELECTRICITY:
- A. Connect to existing power service. Power consumption shall not disrupt Owner's need for continuous service.
- B. Owner will pay cost of energy used. Exercise measures to conserve energy.
- C. Permanent convenience receptacles may be utilized during construction.
- D. If available electrical service is not adequate for Contractor's equipment, the Contractor shall provide temporary power sources and devices on site for his equipment at no cost to the Owner.

1.04 TEMPORARY LIGHTING:
- A. Provide and maintain lighting for construction operations.
- B. Permanent building lighting may be utilized during construction.

1.05 TEMPORARY HEAT:
- A. Utilize Owner's existing heat plant, extend and supplement with temporary heat devices as required to maintain specified conditions for construction operations. Note: Existing control settings are set specifically for the building use and must not be altered without prior approval of the Building Manager. Should existing settings prove inadequate for construction activities, provide Owner-approved supplemental heat isolated to construction areas.
- B. Owner will pay cost of energy used. Exercise measures to conserve energy.
- C. Provide new replacement filters (matching those in use prior to construction) for all existing air-handling equipment serving construction-related areas used during construction.

1.06 TEMPORARY VENTILATION:
- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes vapors, or gases. Note: Existing control settings are set specifically for the building use and must not be altered without prior approval of the Building Manager. Should existing settings prove inadequate for construction activities, provide Owner-approved supplemental ventilation isolated to construction areas.
- B. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.07 TELEPHONE SERVICE:
- A. Provide, maintain and pay for telephone service to field office at time of project mobilization.

1.08 TEMPORARY WATER SERVICE:
- A. Connect to existing water source for construction operations.

B. Owner will pay cost of water used. Exercise measures to conserve water.
C. Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing.

1.09 TEMPORARY SANITARY FACILITIES:
A. Existing on-site facilities may be used.

PART 2 - CONTROLS

2.01 BARRIERS:
A. Provide 8 foot high chain link fencing around the contract limits (negotiated with the Building Manager) to prevent unauthorized entry to construction areas during non-work hours and to allow for continued use of the site and building areas by the owner and the public, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
B. Provide secure barricades required by the Owner and / or governing authorities to segregate construction activities from areas access by the public.
C. Provide protection for plant life designated to remain. Replace damaged plant life.
D. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

2.02 FENCING:
A. Construction: Chain link.
B. Provide 8 foot high fence around construction staging area and contract limits. Equip with vehicular gates with locks.

2.03 INTERIOR ENCLOSURES:
A. Provide temporary partitions as required to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.
B. Construction: Framing and gypsum board sheet materials with closed joints and sealed edges at intersections with existing surfaces.
C. Provide a one (1) hour fire resistance rating and 1-" TFSB sound insulation within the wall to provide an STC rating of 45 in accordance with ASTM E90 for all separations between Owner occupied areas and construction.
D. Paint surfaces exposed to view from Owner-occupied areas.

2.04 PROTECTION OF INSTALLED WORK:
A. Protect installed work and provide special protection where specified in individual specification Sections.
B. Provide temporary and removable protection for installed products. Control activity in immediate work area to minimize damage.
C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
D. Protect finished floors, stairs and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
F. Prohibit traffic from landscaped areas.

2.05 PROGRESS CLEANING:

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
D. Remove waste materials, debris, and rubbish from site periodically and dispose off-site.

2.06 SECURITY:

A. Provide systems to protect work and existing facilities from unauthorized entry, vandalism, or theft.

PART 3 - FACILITIES

3.01 ACCESS ROADS:

A. Designated existing on-site roads shall be used for construction traffic.
B. All temporary roads shall have a proper aggregate base to withstand inclement weather while providing access to required areas.

3.02 PARKING

A. Park in existing established parking areas per the Owner's direction.
B. When site space is not adequate, provide additional off-site parking.

END OF SECTION 01500

SECTION 01600 - PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

A. Requests proposed by the Contractor after award of the Contract for deviation from specified products, materials, equipment, and/or methods of construction required by Contract Documents are considered "substitution" requests.
B. A Contractor's "Substitution Request Form" (attached herein) may be considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect. Otherwise, requests will be returned without action except to record noncompliance with these requirements.
    1. Extensive revisions to Contract Documents are not required.
    2. Proposed changes are in keeping with the general intent of Contract Documents.
    3. The request is timely, fully documented and properly submitted.
    4. The request is directly related to a "similar or equal" clause or similar language in the Contract Documents.
    5. The specified product or method of construction cannot be provided within the Contract Schedule as previously established. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
    6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
    7. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate contractors, and similar considerations.
    8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
    9. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
    10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution shall provide the required warranty.
C. Substitution requests are permitted under the following terms:
    1. All substitution requests must be made directly by the General Contractor (GC) to the Architect. No substitution requests will be accepted from sub-contractors.
    2. All substitution requests must be accompanied by a signed, fully completed "Substitution Request Form" found at the end of this Section.
        a. Submit 3 copies of the "Substitution Request Form" completely filled out.
        b. In addition, provide the following information, as appropriate:
            i. Samples, where applicable or requested.
            ii. A statement indicating the substitution's effect on the Construction Schedule compared to the Schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
            iii. Contractor's waiver of rights to additional payment or time that may be necessary because of the substitution's failure to perform adequately.
    3. The General Contractor/Construction Manager has reviewed the Request and feels it is necessary or preferable for the completion of the Project, and the GC confirms that the schedule will not be negatively impacted.
    4. Requests for substitution will be considered if received within 60 days after commencement of the Work. Requests received more than 60 days after commencement of the Work may be considered or rejected at the discretion of the Architect.
D. Architect's Actions:
    1. Within one week of receipt of the Substitution Request Form, the Architect may request additional information necessary for evaluation.

2. Within 2 weeks of receipt of the request, or one week of receipt of additional information, which ever is later, the Architect will notify the Contractor of acceptance or rejection.
3. If a decision on use of a substitute cannot be made within the time allocated, the product specified shall be incorporated into the Work.
4. Acceptance of the Substitution Request Form will be in the form of a Change Order issued by the GC after incorporation into the Work.

E. The following are not considered substitutions:
1. When an item or material is generic and the Contractor's proposed item is different only in its name, size, color, etc., and not specifically required to comply with an 'or equal' standard.
2. Substitutions requested made during the bidding period or included with the Bid Form on the Bid Due Date, and accepted prior to award of Contract. See Section 00100 – Instructions to Bidders for additional information.
3. Revisions to Contract Documents requested by the Owner or Architect.
4. Specified options of products and construction methods included in Contract Documents.
5. Compliance with governing regulations and orders issued by governing authorities.

F. The Contractor's submittal and, if applicable, the Architect's acceptance of Shop Drawings, Product Data, and/or or Samples which do not comply with the Specifications, does not constitute an acceptable or valid request for substitution, nor does it transfer responsibility for meeting all provisions set forth in these Contract Documents from the Contractor to the Architect.

G. The Architect/Owner maintains the right to reject any and all Substitution Requests at their own discretion.

END OF SECTION 01600

"Substitution Request Form" follows on pages 3 and 4.

SUBSTITUTION REQUEST FORM

The General Contractor (GC):_____ shall initially review this Substitution Request and, if believing it to be relevant, forward it for review by the Architect.

Project:_____

The Sub-Contractor - _____ hereby submits for your consideration the following substitution product instead of the specified product for the above noted Project:

Spec. Section	Section Paragraph	Original Product

Proposed Substitution: (explain using attachments as needed):_____

Attach complete technical data including laboratory tests, if applicable. Include complete information for modification(s) to Documents and/or Specifications required for proper installation as made necessary by proposed Substitution.

Provide the following information, using additional sheets if necessary:

A. **FOR POST-BID SUBSTITUTION REQUESTS ONLY:** If the substitution request is accepted, will the Contractor proposing the substitution pay for any and all changes to the building design, including engineering, detailing, and plan review / permit costs, etc. created by the acceptance of the proposed substitution?

   signify: Yes ( ) or No ( ) – comments: _____

B. **FOR POST-BID SUBSTITUTION REQUESTS ONLY:** Does the GC and Contractor understand that, should the proposed substitution item(s) fail to meet or exceed all the requirements of the specified item(s), the substitution may be rejected at the Architect's discretion and, if so, the GC and/or Contractor will be required to reimburse the Architect directly, on a $100.00/hr. basis, for the time taken to review the rejected substitution?

   signify: Yes ( ) – comments: _____

C. Does the substitution affect dimensions or material fit shown or implied in the drawings?

   signify: Yes ( ) or No ( ) – comments: _____

D. What effect does the substitution have on other trades?

E. Are there differences between the proposed substitution and specified items?

   signify: Yes ( ) or No ( ) – comments: _____

F. Is there a material benefit to the Owner or Project if this substitution is accepted?

signify: Yes ( ) or No ( ) – comments: _____

G. Does the proposed substitution represent a cost savings to the Owner or Project?

signify: Yes ( ) or No ( ) – comments: _____

If so, what is the savings? _____

_____

H. Manufacturer's guarantees of proposed and specified items are:

Same ( ) Different ( ) (explain on attachment if necessary)

The GC states that the function, appearance, and quality of the substitution item(s) is/are equivalent or superior to the specified item and that items A through H above are correct and binding. The GC shall affirm by signature below:

Submitted By:

_____
Signature

Date_____

Firm Name_____

Address_____

Telephone_____

For use by Architect or Consultant:

☐ Accepted

☐ Accepted as noted

☐ Rejected

☐ Received too late

By:_____

Date:_____

Remarks:_____

_____

_____

_____

_____

SECTION 01610 - MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES:
- A. Products
- B. Transportation and handling
- C. Storage and protection
- D. Product options

1.02 RELATED SECTIONS:
- A. Section 01400 - Quality Control: Product quality monitoring.
- B. Section 01600 – Product Substitutions

1.03 PRODUCTS:
- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the work. Products may also include existing materials or components required for reuse.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the contract documents.
- C. Provide interchangeable components of the same manufacturer, for similar components.

1.04 TRANSPORTATION AND HANDLING:
- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to assure that products comply with requirements, quantities, are correct and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.05 STORAGE AND PROTECTION:
- A. Store and protect products in accordance with manufacturer's instruction, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.
- B. For exterior storage of fabricated products, place on sloped supports, above ground.
- C. Provide off-site storage and protection when site does not permit on-site storage or protection.
- D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
- E. Store loose granular materials on solid flat surfaces in a well-drained area. Provide mixing with foreign matter.
- F. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

1.06 PRODUCT OPTIONS:
- A. Products specified by Reference Standards or by description only: Any product meeting those standards or description.
- B. Products specified by naming one or more manufacturers with a provision for substitutions: Submit a request for substitution for any manufacturer not named.

1.07 INCONSISTENCIES:
- A. Refer to Section 00100 – Instructions to Bidders for General Contractor, Construction Manager, and/or sub contractor responsibilities pertaining to Specification inconsistencies.

END OF SECTION 01600

SECTION 01700 CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS
- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to the work of this section.

1.02 SECTION INCLUDES:
- A. Final Acceptance
- B. Starting Systems
- C. Operation and Maintenance Manuals
- D. Warranties

1.03 RELATED SECTIONS:
- A. Section 01019 – Contract Considerations
- B. Section 01039 – Project Coordination
- C. Section 01200 – Project Meetings
- D. Section 01400 – Field Engineering and Quality Control Services

PART 2 – FINAL ACCEPTANCE

2.01 SECTION INCLUDES:
- A. Substantial Completion
- B. Final Inspection

2.02 SUBSTANTIAL COMPLETION
- A. Before requesting inspection for certification of Substantial Completion, the Contractor shall complete the following:
  1. In the Application for Payment that coincides with the date for which Substantial Completion is claimed, show 100% completion for the portion of the Work claimed substantially complete.
  2. Submit specific warranties and similar documents.
  3. Submit record drawings and similar record information.
  4. Complete final clean-up.
- B. When contractor considers that the work is substantially complete, he shall prepare for the Architect a list of items to be complete or corrected.
- C. Upon request by the Owner, the Architect will make an inspection to determine the status of completion.
- D. When the Architect, on basis of inspection, concurs that the work is substantially complete, he will:
  1. Prepare a Certificate of Substantial Completion of AIA Form G704, accompanied by Contractor's list of items to be completed or corrected, as verified and amended by the Architect.
  2. Submit the Certificate to Owner and Contractor for their written acceptance of the responsibilities assigned to them in the Certificate.

2.03 PROJECT COMPLETION REQUIREMENTS:
- A. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions. Administrative actions and submittals that precede or coincide with this application include:
  1. Occupancy permits.
  2. Warranties and maintenance agreements.

3. Test/adjust/balance records.
4. Maintenance instructions.
5. Meter readings.
6. Change-over information related to Owner's occupancy.
7. Final cleaning.
8. Application for reduction of retainage, and consent of surety.

B. Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final payment application include:
1. Completion of Project closeout requirements.
2. Completion of items specified for completion after Substantial Completion.
3. Transmittal of required Project construction records to Owner.
4. Certified property survey.
5. Proof that taxes, fees and similar obligations have been paid.
6. Change of door locks to Owner's access.

2.04 FINAL INSPECTION

A. Before requesting inspection for certification of final acceptance and final payment, the Contractor shall submit the following to the Architect:
1. Guarantees and warranties as required by other sections.
2. Evidence of payment and release of liens, per all requirements stated in the General and Supplementary Conditions.
3. A final statement, accounting for changes to the Contract Sum.
4. A copy of the final inspection list stating that each item has been completed or otherwise resolved for acceptance.
5. Consent of surety to final payment.
6. Evidence of continuing insurance coverage complying with insurance requirements.

B. When the Contractor considers that the work is complete, he shall submit written notice to the Architect that the Work is ready for final inspection and acceptance, and also include a final Application for Payment.

C. The Architect will make an inspection to verify the status of completion with reasonable promptness.

D. When the Architect finds the Work acceptable under the Contract Documents, he will issue a Project Certificate for Payment that will approve the final payment due the Contractor.

PART 3 – STARTING SYSTEMS

3.01 SECTION INCLUDES:

A. Starting systems.
B. Demonstration and instructions.
C. Testing, adjusting, and balancing.

3.02 RELATED SECTIONS:

A. Section 01019 – Contract Considerations
B. Section 01400 - Quality Control: Manufacturers field reports.

3.03 STARTING SYSTEMS:

A. Coordinate schedule for start-up of various equipment and systems.
B. Notify Architect/Engineer and Owner seven days prior to start-up of each item.
C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
E. Verify that wiring and support components for equipment are complete and tested.
F. Execute start-up under supervision of applicable manufacturer's representative and General Contractor/Construction Managers' personnel in accordance with manufacturers' instructions.

G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
H. Submit a written report in accordance with Section 01300 that equipment or system has been properly installed and is functioning correctly.

3.04 DEMONSTRATION AND INSTRUCTIONS:
A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of final inspection.
B. Demonstrate Project equipment and instruct in a classroom environment located at the project site and instructed by a qualified manufacturers' representative knowledgeable about the Project.
C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months of substantial completion.
D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
E. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
G. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

3.05 TESTING, ADJUSTING, AND BALANCING:
A. The contractor will employ, and pay for services of an independent firm to perform testing, adjusting, and balancing. These services shall be coordinated by the Construction Manager.

PART 4 – OPERATION AND MAINTANANCE MANUALS

4.01 SECTION INCLUDES:
A. Format and content of manuals
B. Instruction of Owner's personnel
C. Schedule of submittals

4.02 RELATED SECTIONS:
A. Section 01300 - Submittals:
B. Section 01400 - Quality Control: Manufacturers' instructions
C. Section 01610 - Material and Equipment: Systems demonstration
D. Individual Specifications Sections: Specific requirements for operation and maintenance data

4.03 QUALITY ASSURANCE:
A. A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

4.04 GENERAL FORMAT:
A. Prepare data in the form of an instructional manual.
B. Binders: Commercial quality, 8-1/2 x 11 inch, three D side ring binders with durable covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
C. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
D. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
E. Text: Manufacturer's printed data, or typewritten data on 20-pound paper.

F. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
G. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, in three parts as follows:
   1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Construction Manager, Subcontractors, and major equipment suppliers.
   2. Part 2: Operation and maintenance instructions, arranged by system and/or process flow and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
      a. Significant design criteria.
      b. List of equipment.
      c. Parts list for each component.
      d. Operating instructions.
      e. Maintenance instructions for equipment and systems.
      f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
   3. Part 3: Project documents and certificates, including the following:
      a. Shop drawings and product data.
      b. Air and water balance reports.
      c. Certificates.
      d. Photocopies of warranties.

4.05 MANUAL FOR MATERIALS AND FINISHES:

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

4.06 MANUAL FOR EQUIPMENT AND SYSTEMS:

A. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
B. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
C. Include color-coded wiring diagrams as installed.
D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and any special operating instructions.
E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
F. Provide servicing and lubrication schedule, and list of lubricants required.
G. Include manufacturer's printed operation and maintenance instructions.
H. Include sequence of operation by controls manufacturer.
I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
J. Provide control diagrams by controls manufacturer as installed.

K. Provide General Contractor/Construction Manager's coordination drawings, with color-coded piping diagrams as installed.
L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
N. Include test and balancing reports as specified in Section 01400.
O. Additional Requirements: As specified in individual Product specification sections.
P. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

4.07 INSTRUCTION OF OWNER PERSONNEL:
A. Before final inspection, instruct Owner's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times.
B. For equipment requiring seasonal operation, perform instructions for other seasons within six months.
C. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
D. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

4.08 SUBMITTALS:
A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.
B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
C. Submit 1 copy of completed volumes 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect/Engineer comments. Revise content of all document sets as required prior to final submission.
D. Submit two sets of revised final volumes in final form within 10 days after final inspection.

PART 5 - WARRANTIES

5.01 SECTION INCLUDES:
A. Preparation and submittal of warranties.
B. Time and schedule of submittals.

5.02 RELATED SECTIONS:
A. General Conditions - AIA Document A201 or A201-C/M: Warranties and correction of work.
B. Section 01019 – Contract Considerations
C. Individual Specifications Sections: Warranties required for specific Products or Work.

5.03 FORM OF WARRANTY SUBMITTALS:
A. Bind in commercial quality 8-1/2 x 11 inch, three D side ring binders with durable covers.
B. Cover: Identify each binder with typed or printed title WARRANTIES with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
C. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of Product or work item.
D. Separate each warranty with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

5.04 PREPARATION OF SUBMITTALS:

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

5.05 TIME OF SUBMITTALS:

A. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
B. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period. Coordinate with the Construction Manager for exact time of submittal.

END OF SECTION 01700

SECTION 02070 - DEMOLITION AND ALTERATION WORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. All Drawings and general provisions of Contract, including General Conditions, Supplementary Conditions, Division 0, and Division 1 Specification sections apply to the Work of this Section.

B. Extent of Selective Demolition Work is indicated on Drawings and described herein. In all cases – modify existing construction to make acceptable for new construction.

C. Types and requirements of Selective Demolition Work:
   1. Removing misc. equipment, hardware, brackets, etc.
   2. Demolition requires the selective removal and subsequent offsite disposal of the following:
      a. Portions of structure indicated on drawings and as required to accommodate new construction.
      b. Removal and protection of existing fixtures and equipment items indicated "salvage".

1.02 DEFINITIONS

A. "Remove" is hereby defined as the extraction of the item from its position and the disposal of the item as directed in compliance with the specified classifications, and as required by law.
   1. Concrete and masonry shall be removed in small sections and dampened to keep down dust during removal.
   2. Debris resulting from removal operations shall be removed promptly, without accumulation on the site.

B. After materials and equipment are removed, the structure to remain in place shall be evaluated and the Architect shall be notified of defects uncovered. Repair of such defects and other additional work required by the Architect will be compensated by contract adjustment in accordance with the conditions of the contract.

1.03 CLASSIFICATIONS

A. "Relocate" is hereby classified as any material or equipment removed under this alteration operation, including incidental parts, pieces or attachments, which meets the requirements of the applicable section shall be carefully removed, thoroughly cleaned, and finished as specified in the applicable section of the specifications, then installed as specified for new material.
   1. When procedure of the work prevents the immediate reinstallation of items specified or indicated as "relocate", such items shall be protected, transported and stored until such time as reinstallation is possible. When ready for the reinstallation, remove the items from storage and reinstall in new locations.
   2. In lieu of relocating an existing item, the Contractor may provide a new item, subject to the Architect's approval, and classify the item to be relocated as trash.

B. "Salvage" is hereby classified as any useful material or equipment that will not be reused as part of the project. Such material shall be dismantled to useful sizes, shapes or components and delivered to the owner on the site, set up or packaged for storage as directed by the Architect or as specified. Large equipment/materials shall be placed on wood skids for ease of handling. Removal of paint, degreasing or cleaning, except that required for normal handling, shall not be a part of this classification. Material and equipment salvaged from the operation shall remain the property of the owner.

C. "Trash" is hereby classified as all unusable or unsalvageable materials, such as used lumber, broken concrete, masonry, glass, sheet metal, pipe and steel, and shall become the property of the Contractor, be removed as the work progresses, and be legally disposed of off the site.

1.04 SUBMITTALS

A. Schedule:
   1. Submit schedule indicating proposed methods and sequence of operations for selective demolition work to the architect for review prior to commencement of work. Include coordination for shut-off, capping, and continuation of utility services as required, together with details for duct and noise control protection.

1.05 JOB CONDITIONS

A. Condition of Structures:
   1. Owner assumes no responsibility for actual condition of items or structures to be demolished.
   2. Conditions existing at time of commencement of contract will be maintained by Owner insofar as practicable. However, variations within structure may occur by Owner's removal and salvage operations prior to start of selective demolition work.
B. Partial Demolition and Removal:
   1. Items indicated to be removed but of salvable value shall be determined by the Owner as to salvage/reuse value.
C. Protection:
   1. Provide temporary barricades and other forms of protection as required to protect Owner's personnel and general public from injury due to selective demolition work. Create separations (fire-rated if required) between construction and any occupied areas.
   2. Cease operations and notify the Owner/Architect immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.
   3. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
D. Damages:
   1. Promptly repair damages caused to adjacent facilities by demolition not in this Scope of Work at the Contractor's expense.
E. Traffic:
   1. Conduct selective demolition operations and debris removal in a manner to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Coordinate with the appropriate authorities for any required permits.
   2. Do not close, block or otherwise obstruct streets, walks or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
F. Explosives:
   1. Use of explosives will not be permitted.
G. Utility Services:
   1. Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.
   2. Do not interrupt existing utilities serving occupied or otherwise used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.
H. Environmental Controls:
   1. Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.
   2. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding and pollution.

1.06 INCONSISTENCIES:

A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of any Specification, or between the

Drawings and Specifications, the Contractor's Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - EXECUTION

2.01 INSPECTION

A. Prior to commencement of selective demolition work, inspect areas in which work will be performed. Photograph existing conditions to structure surfaces, equipment or to surrounding properties that could be misconstrued as damage resulting from selective demolition work; file with the architect prior to starting work.

2.02 PREPARATION

A. Cover and protect furniture, equipment and fixtures to remain from soiling or damage when demolition work is performed in rooms or areas from which such items have not been removed.
B. Locate, identify, stub off and disconnect utility services that are not indicated to remain.

2.03 DEMOLITION

A. Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated on drawings in accordance with plans and governing regulations.
   1. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain using power-driven masonry saw or hand tools; do not use power-driven impact tools.
   2. Locate demolition equipment throughout structure and promptly remove debris to avoid imposing excessive loads on supporting walls, floors or framing. Provide services for effective air and water pollution controls as required by local authorities having jurisdiction.
   3. For interior slabs or grade, use removal methods that will not crack or structurally disturb adjacent slabs or partitions. Use power saw where possible.
   4. Completely fill below grade areas and voids resulting from demolition work. Provide fill consisting of approved earth, gravel or sand, free of trash and debris stones over 6 inches in diameter, roots or other organic matter.
B. Structural Elements:
   1. If unanticipated structural elements, which conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Owner's representative in written, accurate detail. Pending receipt of directive from the Architect, rearrange selective demolition schedule as necessary to continue overall job progress without delay.
   2. Services, equipment and other items required to maintain the normal function of the existing building shall be attached to or supported by temporary substantial supports until new permanent construction is completed for their support or until otherwise directed. Included in this item will be Owner's equipment built into or supported by walls to be removed.

2.04 SALVAGE MATERIALS

A. Where indicted on drawings as "salvage" - deliver to Owner. Carefully remove indicated items, clean, store and turn over to Owner at a prescribed location.
B. The Contractor shall coordinate with the Owner regarding the disposition of any salvageable items remaining in each work area prior to Contractor starting work. Items deemed salvageable by the Owner shall be turned over to the Owner. Items deemed unsalvageable by the Owner shall be legally disposed of off site by the Contractor.

2.05 DISPOSAL OF DEMOLISHED MATERIALS

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

2.06 RESPONSIBILITY:

A. The Contractor shall be solely responsible for coordinating demolition with the extent of finished work to avoid the unscheduled removal of any building component.
B. Unscheduled removal of any building component shall be replaced to previous condition at the Contractor's cost.

2.07 CLEAN-UP AND REPAIR:

A. Upon completion of demolition work, remove tools, equipment and demolished materials from site. Remove protection and leave interior areas broom clean.
B. Repair demolition performed in excess of that required. Return structures and surfaces to remain to condition existing prior to commencement of selective demolition work. Repair adjacent construction of surfaces soiled or damaged by selective demolition work.
C. Remove any temporary work not part of the ongoing Project.

END OF SECTION 02070

SECTION 04050 - MASONRY PROCEDURES

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. Installation Procedures of all types of masonry units specified elsewhere.
B. Installation Requirements of misc. masonry accessories specified in Divs. 4 & 7, and other material specified in other Divisions of these specifications.
C. Coordination between masonry and other equipment which may be installed in the masonry, or require masonry openings.
D. See Section 04150 – Masonry Accessories for masonry cleaning materials and procedures.
E. See Section 07600 – Sheet Metal Flashings and Trim for other flashing work specified therein that might be included for installation in the work of this Section.

1.02 GENERAL REQUIREMENTS:

A. Coordinate with all special masonry shapes and different kinds of masonry that shall be installed in this Project.
B. Coordinate with the Mechanical and Electrical trade Contractors for equipment that may need masonry openings, mounting or other consideration that may affect the masonry installation.
C. Coordinate with the structural Documents for lintels and beams over proposed masonry openings to determine if steel or masonry lintels are required.
D. Fire Ratings: Fire rated concrete masonry units shall be in compliance when:
   1. The CMU has been certified through the equivalent thickness method contained in Chapter 3 of ACI 216.1.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

A. Section 04100 – Mortar and Grout.
B. Section 04150 - Masonry Accessories.
C. Section 04200 – Concrete Masonry Units
D. Section 04210 - Brick Veneer Masonry.
E. Division 5 – Metals
F. Section 07200 - Insulation.
G. Section 07260 – Vapor Retarders and Water Barriers
H. Section 07600 – Sheet Metal Flashing and Trim.
I. Section 07900 - Joint Sealants.
J. Section 09300 - Tile.
K. Section 09900 - Painting.

1.04 QUALITY ASSURANCE:

A. Single source responsibility for Masonry Units: Obtain exposed masonry units of uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from one manufacturer for each different product relied for each continuous surface or visually related surfaces.
B. Single Source responsibility for Mortar Materials: Obtain Mortar ingredients of uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source and producer for each aggregate.
C. Temporary Bracing: Comply with Mason Contractors Association of America's Standard Practice for Bracing Masonry Walls Under Construction, and Masonry Wall Bracing Design Handbook, published by the Masonry Contractors Association of America.

1.05 ENVIRONMENTAL REQUIREMENTS:

A. Cold weather requirements: IMIAC-Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

1.06 INCONSISTENCIES:

A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of any Specification, or between the Drawings and Specifications, the Contractor's Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - PRODUCTS

2.01 MATERIAL:

A. See other Masonry Sections in this Specification for all material and products associated with the Masonry Installations and related herein to the Masonry Procedures and Instructions that follow.

PART 3 - EXECUTION

3.01 GENERAL:

A. When the mean daily temperature falls below 40ºF follow the cold weather requirements specified below. Prior to implementation of these procedures, conduct a meeting of all involved parties to detail the practical institution of these requirements.
B. On bearing surfaces covered with ice or snow, apply heat to surfaces until surfaces are dry. Remove previously installed masonry damaged due to cold weather.
C. Install dry masonry units that are at least 20ºF. If specifically approved by the Engineer, use Type III Portland cement and/or mortar setting. Use mortar at a temperature of between 40ºF and 120ºF. If possible, use 70ºF mortar. Mix mortar so that successive batches vary in temperature by no more than 30 degree F.
D. Air temperature 40ºF to 32ºF heat sand or mixing water to achieve specified mortar temperature at point of use.
E. Air temperature 32º F to 25º F:
    1. Heat sand and mixing water to at least 50ºF. prior to mixing. Provide continuous auxiliary heat to mortar boards as necessary to ensure specified mortar temperature at point of use.

3.02 INSTALLATION – GENERAL:

A. Wetting Clay Brick: Wet brick made from clay or shale which has ASTM C 67 initial rates of absorption (suction) of more than 30 grams per 30 sq. in. per minute. Use wetting methods which ensure each clay masonry unit being nearly saturated but surface dry when laid.
B. Do not wet concrete masonry units.
C. Cleaning Reinforcing: Before placing, remove loose rust, ice and other coating from reinforcing.
D. Thickness: Build cavity and composite walls, floors and other masonry construction to the full thickness show. Build single-wythe walls to the actual thickness of the masonry units, using the nominal thickness of the material.
E. Leave openings for equipment to be installed before completion of masonry work. After installation of equipment, complete masonry work to match work immediately adjacent to the opening.
F. Cut masonry units using motor-driven saws. Use dry cutting saws to cut concrete masonry units.
G. Matching Existing Masonry Work: Match coursing, bonding, color and texture of new masonry work with existing. Tooth masonry infill into existing masonry coursing.
H. Sealer: Apply two (2) coats of sealer complying with requirements of the manufacturer.
    1. At all exposed exterior Decorative Concrete Masonry Units unless otherwise indicated.
    2. At all exposed exterior Regular Concrete Masonry Units unless otherwise indicated.
    3. At all exposed interior Regular Concrete Masonry Units that are not scheduled to be otherwise painted.

3.03 CONSTRUCTION TOLERANCES:

A. Variations from Plumb: For vertical lines and surfaces of columns, walls and arises do not exceed ¼" in 10', or 3/8" in a story height not to exceed 20'. For exterior corners, expansion joints, control joints and other conspicuous lines do not exceed ¼" in any story or 20' maximum.
B. Variations from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines, do not exceed ¼" in any bay or 20' maximum.
C. Variation of Linear Building Line: For position shown in plan and related portion of columns, walls and partitions, do not exceed ½" in any bay or 20' maximum.
D. Variations in Cross-Sectional Dimensions: For columns and thickness of walls, from dimensions shown, do not exceed minus ¼" nor plus ½".
E. Variations in Mortar Joint Thickness: Do not exceed bed joint thickness indicated by more than plus or minus 1/8". Do not exceed head joint thickness indicated by more that plus or minus 1/8".

3.04 LAYING MASONRY WALLS:

A. Layout walls in advance for accurate spacing of surface bond patters with uniform joint widths and to accurately locate openings, movement-type joints, returns and offsets. Avoid the use of less that ½ size units at corners, jambs whenever possible.
B. Pattern Bond: Lay exposed masonry in the bond pattern shown or, if not shown, lay in running bond with vertical joint in each course centered on units in courses above and below. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less that 2". Do not use units with less than nominal 4" horizontal face dimensions at corners or jambs.
C. Stopping and Resuming Work: Rack back ½ unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly and remove loose masonry units and mortar prior to laying fresh masonry.
D. Built-in Work: As the Work progresses, build-in items specified under this and other sections of these specification. Fill in solidly with masonry around built-in items.
    1. Fill space between hollow metal frames and masonry solidly with mortar, unless otherwise indicated.
    2. Where build-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.
    3. Fill cores in hollow concrete masonry units with grout 3 courses (24") under bearing plated, beams, lintels, posts and similar items.
E. Masonry walls indicated to extend to the roof deck shall terminate 1" below the underside if the deck - typical.
    1. Maintain fire-rated separations required by filling resulting space with a firestop joint assembly suitable for permanent placement – as required to maintain rating.
    2. Coordinate with Architectural Details for masonry termination at decks above, or at a minimum:
        a. Provide a continuous 16 ga. track to receive masonry when running perpendicular to deck flutes.
        b. Where masonry wall is parallel to deck flutes, provide a supplemental 12 ga. plate to link flutes and provide attachment for metal track.

3.05 MORTAR BEDDING AND JOINTING:

A. Lay solid brick size masonry units with completely filled bed and head joint; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints.
B. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footing and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout. For starting course on footings where ceils are not grouted, spread out full mortar bed including areas under cells.
C. Maintain joints widths shown, except for minor variations required to maintain bond alignment. If not indicated – all joints shall be 3/8".

D. Tool exposed joints slightly concave for brick and slightly concave for block including scored joint using a jointer larger than joint thickness, unless otherwise noted.
E. Do not pound corners or jambs to shift adjacent stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.
F. Set stone trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes
   1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
   2. Wet joint surfaces thoroughly before applying mortar.
G. For all conditions receiving a vapor/air barrier membrane application all masonry joints shall be struck flush with full mortar bed.

3.06 STRUCTURAL BONDING OF MULTI-WYTHE MASONRY:
A. Use continuous horizontal joint reinforcement installed in horizontal mortar joints for bond tie between wythes. Install at not more than 16" OC vertically.
   1. For horizontally reinforced masonry, provide continuity at corners with prefabricated "L" units, in addition to masonry bonding.
B. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, provide same type of bonding specified for structural bonding between wythes and space as follows:
   1. Provide individual metal ties at not more than 24" OC vertically.
   2. Provide continuity with horizontal joint reinforcement using prefabricated "T" units.

3.07 CAVITY WALLS:
A. Keep cavity clean of mortar droppings and other materials during construction. Strike joints facing cavity flush.
B. Tie exterior wythe to back-up with continuous horizontal joint reinforcing, installed in mortar joints at not more than 16" OC vertically.
C. Provide weep holes (2-1/2" high open head joints) in exterior wythe of cavity wall located immediately above ledges and flashing, space 24" OC, unless otherwise indicated.
D. Provide 10" depth of cavity drainage material located immediately above all lintels, flashings and ledges.

3.08 HORIZONTAL JOINT REINFORCEMENT:
A. General: Provide continuous horizontal joint reinforcement as indicated. Install longitudinal side rods in mortar for their entire length with a minimum cover of 5/8" on exterior side of walls, ½" elsewhere. Lap reinforcing a minimum of 6".
B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
C. Reinforce walls with continuous horizontal joint reinforcing unless specifically noted to be omitted.

3.09 ANCHORING MASONRY WORK:
A. General: Provide anchor devices of type specified.
   1. Anchor masonry to structural members where masonry abuts or faces structural members.

3.10 REINFORCED UNIT MASONRY INSTALLATION:
A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
   1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.

2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

B. Place Reinforcement: Comply with requirements in Michigan Building Code.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
   1. Comply with requirements in Michigan Building Code for cleanouts and for grout placement, including minimum grout space and maximum pour height
   2. Limit height of vertical grout pours to not more than 60".

3.11 CONTROL AND EXPANSION JOINTS:

A. Refer to Section 04200 – Concrete Unit Masonry and Section 04210 – Brick Veneer Masonry for additional information on Control/Expansion Joints.

B. Provide a brick expansion joint and/or a block control joint within 24" of a corner of masonry construction where the wall length in either direction is in excess of 24 feet. Provide joint in normal head coursing and provide backer-rod and sealant as noted elsewhere in this Specification.

C. General: Provide vertical and horizontal expansion, control and isolation joints in masonry where shown on Documents, specified in other Sections of these Specifications, or as recommended by the Masonry Institute.

3.12 MASONRY LINTELS:

A. There are no lintels scheduled in this project

3.13 FLASHING OF MASONRY WORK:

A. General: Provide concealed flashing in masonry work at, or above, shelf angles, lintels, ledges and other obstructions to the downward flow of water in the wall so as to divert such water to the exterior. Prepare masonry surfaces smooth and free from projections which could puncture flashing. Place through-wall flashing on sloping bed of mortar and cover with mortar. Seal penetrations in flashing with mastic before covering with mortar. Extend flashings through exterior face of masonry and turn down to form drip. Do not allow any penetrations in flashings.

B. Extend flashing the full length of lintels and shelf angles and minimum of 4" into masonry each end. Extend flashing from exterior face of outer wythe of masonry, through the other wythe, turned up a minimum of 4", and through the inner wythe to within ½" of the interior face of the wall in exposed work. Where interior surface of inner wythe is concealed by furring, carry flashing completely through the inner wythe and turn up approximately 2". At heads and sills turn up ends not less that 2" to form a pan/end dam.

C. Fabricate through-wall metal flashings embedded in masonry with ribs formed in sawtooth pattern at 3-inch intervals along length of flashing to provide a 3-way integral mortar bond and weep hole drainage as indicated.

D. Interlock and joints of deformed metal flashings by over-lapping deformation not less than 1-1/2" and seal lap with elastic sealant.

E. Install flashing to comply with manufacturer's instructions.

F. Install single-wythe CMU flashing system to comply with manufacturer's instructions.

G. Provide weep holes as specified in Section 04150 – Masonry Accessories, and coordinate with flashings and lintels.

H. Install reglets and nailers for flashing and other related work where shown to be built into masonry work.

3.14 REPAIR, POINTING AND CLEANING:

A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or gout, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints including corners, openings and adjacent work to provide a neat, uniform appearance, prepared for application of sealants.
C. Final Cleaning: After mortar is thoroughly set and cored, clean masonry as follows:
   1. Coordinate with Section 04150 – Masonry Accessories for additional information concerning masonry cleaning material and procedures.
   2. Cleaning methods shall be appropriate for each type of brick or other masonry material encountered and shall be non-injurious to said material. Cleaning methods shall be in accordance with Brick Institute of America Technical Notes 20 and comply with best industry standards and practices.
   3. Remove large mortar particles by hand with wooden paddles and non-metallic scrape hoes or chisels.
   4. Acid cleaning and abrasive cleaning methods will not be permitted.
   5. Perform pressurized water jet cleaning (no cleaning solution) at the lowest effective pressures method. If high pressures are required, use a fan-type hose tip of no less than 20 degrees to avoid damage to masonry.
   6. Test cleaning methods on sample wall panel; leave ½ panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
   7. Saturate wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water. Use:
      a. Detergent
      b. Acidic cleaner; apply in compliance with directions of cleaner manufacturer.
   8. Clean stone trim to comply with stone supplier's written instructions.
      a. Clean limestone units to comply with recommendations in "Indiana limestone Handbook".
   9. Protection: Provide final protection and maintain conditions in a manner acceptable to Installer, which ensures unit masonry work being without damage and deterioration at them of substantial completion.

3.15 DETAILING:

A. All Joints shall be formed uniformly to the Architects specifications as noted on the documents, or as specified prior to construction. The Contractor shall coordinate with the Architect for type of joint if not so noted.

END OF SECTION - 04050

SECTION 04100 - MORTAR and GROUT

PART 1 - GENERAL

1.01 WORK INCLUDED:
- A. Mortar for Masonry Joints.
- B. Mortar bedding.
- C. Grout for filling masonry cores and setting beds.

1.02 RELATED WORK SPECIFIED ELSEWHERE:
- A. Section 03300 - Cast-in-place Concrete.
- B. Section 04050 - Masonry Procedures.
- C. Section 04200 – Concrete Unit Masonry
- D. Section 04210 - Brick Veneer Masonry.
- E. Section 08100 - Hollow Metal Doors and Frames.
- F. Section 09100 - Metal Support Systems.

1.03 REFERENCE STANDARDS:
- A. ASTM C-5 - Quicklime for Structural Purposes.
- B. ASTM C-91 - Masonry Cement.
- C. ASTM C 94 – Ready-mix Concrete
- D. ASTM C-144 - Aggregate for Masonry Mortar.
- E. ASTM C-150 - Portland Cement.
- F. ASTM C-207 - Hydrated Lime for Masonry Purposes.
- G. ASTM C-270 - Mortar for Unit Masonry.
- H. ASTM C 404 - Aggregates for Masonry Grout
- I. ASTM C-476 - Mortar and Grout for Reinforced Masonry.
- J. ASTM C 1329 – Standard Specification for Mortar Cement.
- K. ACI 530/ASCE 5/TMS 402 – Building Code Requirements for Masonry Structures.
- L. ACI 530.1/ASCE 6/TMS 602 – Specification for Masonry Structures.
- M. NCMA TR-88 – Hot and Cold Weather Masonry Construction Manual.

1.04 SUBMITTALS:
- A. Product Data: Submit certified test reports showing that the cementitious components of the mortar mix comply with the specified requirements.
- B. Submit two samples illustrating mortar color and range.
- C. Submit manufacturer's instructions.

1.05 QUALITY ASSURANCE:
- A. When required by local ordinance or by the Engineer, prepare mortar prisms for strength testing and test them to verify compliance with these specifications.

1.06 ENVIRONMENTAL REQUIRMENTS:
- A. Cold Weather Requirements: Comply with recommendations of IMIAWC (CW).
- B. Hot Weather Requirements: Comply with IMIAWC (HW)

1.07 INCONSISTENCIES:
- A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of this Specification, or between the Drawings and Specifications, the Contractor's Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - PRODUCTS

2.01 MORTAR MATERIALS:

A. Portland Cement: ASTM C-150, Type I - Normal, except Type III may be used for cold weather. Provide natural color or white cement as required to produce required mortar colors noted below.
B. Masonry Cement: ASTM C-91, Type N, *or S or M as required for special conditions.*
   1. Colored Mortar: Premixed cement as required to match Architect's color sample, or as from complete line of
      a. Solomon Grind-Chemical Services
      b. Glen-Gary mortar colorants.
C. Hydrated Lime: ASTM C-207, Type S.
D. Quicklime: ASTM C-5, non-hydraulic type.
E. Water: Potable, clean and free from injurious amounts of oil, alkali, acids, organic materials.
F. Mortar Aggregate: Natural, or as manufactured sand, meeting ASTM C-144.
G. Grout Aggregate: ASTM C-404.
H. Mortar Color Pigment: High purity, chemically inert, unfading, alkali-fast mineral oxides, finely ground and especially prepared for mortar.
   1. Mineral oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortar. Do not add pigments to colored cement products.
   2. Pigments shall not exceed 10 percent of Portland cement by weight.
   3. Pigments shall not exceed 5 percent of masonry cement or mortar cement by weight.
   4. Pigments shall meet ASTM C979/
   5. Color as selected by Architect from manufacturer's complete line.
      a. Solomon Grind-Chem Services
      b. Glen-Gary mortar colorants.
I. Admixtures: Avoid use of accelerants and admixtures (other than colorants) if possible. All Admixtures shall be submitted and authorized by the Architect prior to application.
   1. Accelerating Admixture: Nonchloride type of use in cold weather.
   2. Moisture-Resistant Admixture: Water repellent compound designed to reduce capillarity.
J. Bonding Agent: Multi-Purpose, Acrylic Latex type. Use per manufacturer's instruction, and only as required for field conditions.

2.02 MASONRY CEMENT MORTAR:

A. Masonry Cement Mortar for Unit Masonry - per ASTM C 270 per system below, unless special conditions are encountered:
   1. Type M Mortar: Mix to the Property Specifications of ASTM C 270:
      a. Compressive Strength: 2500 psi, min., at 28 days for laboratory mixed mortar with a flow of 110 plus/minus 5%.
      b. Water Retention: 75%, Min.
      c. Air Content: 12%, Max.
      d. Aggregate Ratio: No less that 2.25 and no more than 3.5 times the sum of the separate volumes of cementitious materials.
   2. Type S Mortar: Mix to the Property Specifications of ASTM C 270:
      a. Compressive Strength: 1800 psi, min., at 28 days for laboratory mixed mortar with a flow of 110 plus/minus 5%.
      b. Water Retention: 75%, Min.
      c. Air Content: 12%, Max.
      d. Aggregate Ratio: No less that 2.25 and no more than 3.5 times the sum of the separate volumes of cementitious materials.
   3. Type N Mortar: Mix to the Property Specifications of ASTM C 270:
      a. Compressive Strength: 750 psi, min., at 28 days for laboratory mixed mortar with a flow of 110 plus/minus 5%.
      b. Water Retention: 75%, Min.
      c. Air Content: 14%, Max.

d. Aggregate Ratio: No less that 2.25 and no more than 3.5 times the sum of the separate volumes of cementitious materials.

4. Masonry Mortar Mix: Factory blended masonry cement sand mix proportioned to produce masonry mortar complying with the property specifications in ASTM C 270 for the specified type of masonry mortar.
   a. Masonry Cement: ASTM C 91, Type M.
   b. Masonry Cement: ASTM C 91, Type S.
   c. Masonry Cement: ASTM C 91, Type N.
   d. Sand: Mason's sand, ASTM C 144.

B. Applications:
   1. Foundations: Use Type M or S.
   2. Other Masonry: Use Type M or S.
   3. Special Masonry: Use Type N (for applications of soft masonry)
   4. Type N or S for reinforced masonry and all other masonry work.
   5. Pointing mortar: Type N with maximum 2% ammonium stearate or calcium stearate per cement weight.

2.03 GROUT MIXES:

A. Comply with ASTM C 476, slump of 8 to 10 inches measured per ASTM C 143.
   1. Provide fine or coarse grout per ACI 530/ASCE 5/TMS 402, Table 1.15.1, Grout Space Requirements, based upon height and CMU cell size.
   2. ASTM C 476 grout mix shall be determined by the following method:
      a. By specified compressive strength tested in accordance ASTM C 1019, minimum compressive strength of 2,000 psi.

B. Engineered Masonry: 3,000 psi strength at 28 days; 8-10" slump; provide premixed type in accordance with ASTM C 94.
   1. Fine grout for spaces with smallest horizontal dimension of 2" or less.
   2. Coarse grout for spaces with smallest horizontal dimension greater the 2".

PART 3 - EXECUTION

3.01 MIXING OF MORTAR:

A. Mixing of mortar (and grout) shall be done in a mechanical batch mixer, in which all cementitious material shall be mixed for at least 5 minutes with the maximum amount of water. Hand mixing for small jobs is not permitted without the Architect's permission.

B. Mortar shall be used within 2 hours after mixing when air temperature is 80ºF, or higher, and within 3-1/2 hours when air temperature is less than 80ºF. Retempering during this time to replace water lost be evaporation will be allowed.

C. Maintain sand uniformly damp immediately before the mixing process.

D. Mix mortar ingredients in accordance with ASTM C 270.

3.02 INSTALLATION:

A. Placing of mortar and tooling of joints is additionally described in Sections 04050 and 04200.

B. Fill all hollow metal door and glass frames solidly with mortar, including those frames that are set into existing masonry or into concrete wall openings after walls are poured.

C. Do not install grout in lifts greater than 16" without consolidating grout by rodding.

D. Do not displace reinforcement while placing grout.

3.03 GROUTING:

A. Grout Placement – normal lift; subject to the Contract Documents and Masonry Institute's recommendations:
   1. Place grout within 1-1/2 hours from mixing and prior to initial set of grout.
   2. Do not exceed the grout pour heights of ACI 530.1/ASCE 6/TMS 602.

3. Place grout in lifts not exceeding 5 feet high.
   a. If there is a significant delay, stop grout minimum of 1-1/2 inches below the top of masonry to form a shear key with the next lift.
4. Consolidate grout at time of placement for pours of 12 inches or less by mechanical vibration or puddling.
5. Consolidate grout at time of placement for pours exceeding 12 inches by mechanical vibration and reconsolidate by mechanical vibration while grout is still plastic.
6. Solidly fill cells below lintel or beam bearing minimum of 24 inches high.
7. Bond Beams and Masonry Lintels:
   a. Allow masonry lintels to attain sufficient strength to support loads imposed during construction before removing temporary supports.
8. Alternatively, place masonry units and grout using construction procedures employed in the accepted grout demonstration panel..

B. Low-lifting Grouting:
1. Limit height of pours to 12”.
2. Limit height of masonry to 16” above each pour.
3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

C. High-Lift Grouting:
1. Verify that horizontal and vertical reinforcement is in proper position and adequately secured before beginning pours.
2. Brick: Limit pours to maximum 12’ in height and 25‘ horizontally.
3. Hollow Masonry: Limit lifts to maximum 4’ and pours to maximum height of 24’.
4. Place grout for spanning elements in single, continuous pour.

END OF SECTION - 04100

SECTION 04150 - MASONRY ACCESSORIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:
- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to the work of this section.
- B. Specifications as supported by the Masonry Reinforcing Corporation of America.
- C. Coordinate with Section 04050 – Masonry Accessories for requirements of installation regarding materials herein specified.
- D. Coordinate with Section 04200 – Concrete Masonry Units for Schedule of typical Reinforcing in concrete masonry unit wall construction.
- E. Coordinate with Section 04210 – Brick Veneer Masonry for Product material to be installed with accessories for this Section.

1.02 WORK INCLUDED:
- A. Horizontal wire reinforcing or adjustable wire reinforcing as required by individual details/conditions.
- B. Masonry veneer reinforcement systems.
- C. Steel bar reinforcing.
- D. Anchors, ties, dowels and other miscellaneous metal accessories.
- E. Masonry system concealed Flashings – flexible and fixed.
- F. Misc. Accessories
- G. Masonry Cleaners

1.03 RELATED WORK SPECIFIED ELSEWHERE:
- A. Built-in items furnished by other trades.
- B. Section 04050 - Masonry Procedures
- C. Section 04100 - Mortar and Grout
- D. Section 04200 - Concrete Unit Masonry
- E. Section 07900 - Joint Sealants.

1.04 SUBMITTALS:
- A. Product Data: Submit manufacturer's product literature and certification for all masonry accessories demonstrating compliance with specified requirements.
- B. Shop Drawings: Submit shop drawings for all masonry reinforcing bars.

1.05 INCONSISTENCIES:
- A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of any Specification, or between the Drawings and Specifications, the Contractor's Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - PRODUCTS

2.01 STEEL BAR REINFORCING:
- A. Standards: Reinforcing shall conform to ASTM A-615, Grade 60 for deformed bars for masonry construction.
- B. See Drawings for additional information or requirements of steel reinforcement.

2.02 WIRE GAUGE REINFORCING:
- A. Standards:

1. Reinforcing shall conform to ASTM A 82 for uncoated wire and with ASTM A 153, Class B-2 (1.5 oz. per sq. ft. of wire surface) for zinc coating (galvanized) applied after prefabrication into units.
   a. Applications requiring hot-dipped galvanizing: masonry exposed to weather or in contact with earth.
   b. Applications allowing mill galvanizing: Interior masonry construction in walls whose environments shall be less than 75% relative humidity during occupancy.
2. Reinforcing shall be milled galvanized, zinc coating (0.10 oz. per sq. ft.) applied after fabrication into units. Application: Interior masonry.

B. Single-wythe Design:
   1. Ladder Type with cross rods spaced not more than 16" o.c. for single wythe wall reinforcement.
   2. Prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10'.
C. Width - Size: Two inches less than nominal thickness of wall.
D. Rod Size: Deformed longitudinal side rods 9 gauge (3/16" – heavy) and cross rods to be 9 gauge wires unless noted otherwise.
E. Cross Rods: Cross rods which serve as metal tie in exterior cavity and other multi-wythe walls shall be galvanized and drip crimped.
F. Corners and Tee Sections: Prefabricated of material and design similar to main reinforcement.
G. Approved Manufacturers:
   1. Dur-O-Wal Manufacturing Co.
   2. Heckmann Building Products, Inc.
   3. Hohmann & Barnard, Inc.
   4. Wire-Bond
   5. or Architect/Engineer approved substitution.

2.03 ANCHOR AND TIE SYSTEMS:

A. Anchor rods, to connect masonry to existing wall. Helix?? Sleeve with metal strap???

2.04 ACCESSORIES:

A. Reinforcement Retaining Clip: extruded rigid polyvinyl chloride (PVC), with one retaining ridge to secure 9 gauge wire, and three retaining ridges to secure 3/16" diameter wire, grooved base for improved mortar bond.
B. Joint Reinforcement Wire:
   1. Wire size: 3/16", galvanized wire.
   2. Length: 10 feet minimum continuous piece length.
C. Grout Stop:
   1. Non-corrosive ¼" square polypropylene monofilament screening, in widths to match material, allowing proper bonding while preventing grout from falling through block cores.

2.05 SEALANTS:

A. Provide integral water repellent admixtures for block and mortar.
   1. Provide a liquid polymeric admixture to the manufacturing of the block unit.
      a. Similar to 'Dry-Block' by Grace Masonry Products.
   2. Provide an integral admixture to the mortar as a system application for waterproofing masonry construction.
      a. Similar to 'Dry-Block II' by Grace Masonry Products.

2.06 MASONRY CLEANING:

A. Site mixed Detergent Solution: ½ cup trisodium phosphate and ½ cup laundry detergent dissolved in one gallon of warm water.
   1. Pre-soak masonry prior to using detergent to minimize absorption of detergent agent.
   2. Protect all windows, doors and trim with plastic sheeting.

3. Protect all cast-in-place concrete and stone work as required by the manufacturer from and detergents and from run-off of cleaning procedure.
4. Refer to the Brick Industry Association Technical Notes for requirements of special cleaning methods.

B. Pressure washing shall not exceed 300 psi and care shall be taken to proceed only at acute angles to the masonry if this method is used. Use a 25 – 50 degree fan-tip for all pressure spraying.

PART 3 - EXECUTION

3.01 INSTALLATION OF REINFORCING:

A. If not otherwise indicated on the Drawings, install wire gauge masonry reinforcing in horizontal joints of concrete block walls at a spacing of not more than 16 inches apart vertically to coincide with brick and block coursing.
B. Install wire gauge reinforcing so that it is completely embedded in mortar or grout. Joints with wire gauge reinforcing shall be provided in accordance with ACI-530 (latest edition). Where continuous wire gauge reinforcing is called for, lap reinforcing 12” min. and install corner and intersection assemblies to provide complete reinforcement of the horizontal masonry joint at that elevation. Tie corner-reinforcing units to straight wall units.
C. Lap reinforcing bars in accordance with ACI-530 (latest edition), a minimum of 48 bar diameters and not less than 24” where spliced. Separate lapping bars by at least one bar diameter or 1” (whichever is greater), or wire together. Lap horizontal joint reinforcing 24" where spliced. Use preformed corners and sections.
D. Unless otherwise indicated on Drawings, place reinforcing bars so that they have a minimum clearance of 1/4" from adjacent masonry and meet all spacing requirements of ACI-530 (latest edition). Use corner bars for continuous horizontal reinforcing at corners. Dowel vertical reinforcing from footing to match vertical reinforcing size and location.
E. Secure rigid insulation in place with rigid insulation retainer at each masonry wall tie connector location on horizontal joint reinforcement.

3.02 INSTALLATION OF ANCHOR AND TIE SYSTEMS:

A. Install metal ties with maximum spacing of 16" on center vertically, and 24" on center horizontally for brick and 32” on center horizontally for block, unless noted otherwise.
B. Provide additional ties within 12” of all masonry openings.
C. Extend reinforcement a minimum of 8“ past masonry jamb openings, and 1 course above each opening.

3.03 REFER TO SECTION 04050 – MASONRY PROCEDURES FOR ADDITIONAL REQUIREMENTS

END OF SECTION 04150

SECTION 04200 - CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.01 WORK INCLUDED:
- A. Standard concrete masonry units.
- B. Concrete masonry: reinforcing, anchorage and accessories.

1.02 RELATED WORK SPECIFIED ELSEWHERE:
- A. Section 04050 - Masonry Procedures.
- B. Section 04100 - Mortar and Grout.
- C. Section 04150 - Masonry Accessories.
- D. Section 04210 - Brick Veneer Masonry.
- E. Division 5 - Metals
- F. Section 07190 - Water Repellents and Water Barriers
- G. Section 07200 - Insulation.
- H. Section 07600 - Sheet Metal Flashing and Trim.
- I. Section 07900 - Joint Sealants.
- J. Section 09300 - Tile.
- K. Section 09900 - Painting.

1.03 QUALITY ASSURANCE:
- A. Perform concrete unit masonry work in accordance with requirements of ANSI A41.1, unless indicated otherwise herein.
- B. The Contractor shall submit a notarized affidavit from the block manufacturer certifying that all block are manufactured in compliance with the ASTM standards listed. The affidavit shall also state that blocks will be cured in accordance with one of the methods specified.

1.04 REFERENCE STANDARDS:
- A. As required by BOCA Ch. 17 - Masonry Code: ACI 530-/ASCE 5/TMS 402
- B. ASTM C-33: Concrete Aggregates
- C. ASTM C-331: Lightweight Aggregates for Concrete Masonry Units
- D. ASTM C-90: Hollow Load-Bearing Concrete and Decorative Masonry Units
- E. ASTM C-145: Solid Load-Bearing Concrete Masonry Units
- F. ASTM C-140: Sampling and Testing Concrete Masonry Units
- G. ASTM C-55: Concrete Building Brick
- H. ANSI A41.1: Building Code Requirements for Masonry
- I. Comply with UL and the State of Michigan Fire Marshall requirements for rated construction and corresponding masonry unit classification.
- J. ASTM C129, Type I: Hollow non-load bearing block units.

1.05 SUBMITTALS:
- A. Shop Drawings:
  1. If control joints are indicated on the Drawings, submit shop drawings showing Interior Elevations (drawn to scale) indicating control joint locations and coordination with brick veneer expansion joints.
  2. If control joints are **not** indicated on the Drawings, submit shop drawings showing Interior Elevations (drawn to scale) indicating proposed control joint locations and coordination with brick veneer expansion joints. The Architect may make discretionary adjustments to locations of joints during the review of this Submittal. If so, a meeting between the Architect and Mason shall be scheduled by the Contractor to reconcile the layouts.
  3. Provide half scale detail drawing(s) of all control joint details.

1.06 ENVIRONMENTAL REQUIREMENTS:

A. Refer to Section 04050 for masonry procedures regarding cold weather construction and weather protection.

1.07 PROTECTION:
A. Do not damage existing surfaces or finishes in the delivery or erection of masonry or preparation of mortar.
B. Maintain protecting boards at exposed external corners that may be damaged by construction activities. Provide such protection without damaging completed work.

1.08 INCONSISTENCIES:
A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of this Specification, or between the Drawings and Specifications, the Contractor's Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - PRODUCTS

2.01 CONCRETE BLOCK UNITS:
A. Unless otherwise indicated, provide concrete block units with face dimensions 7-5/8" high x 15-5/8" long, actual widths shall be 3/8" less than the nominal dimensions noted on Drawings. Provide all special sizes and shapes noted on Drawings, or as required by these specifications or standard practice for construction. No units with chipped surfaces will be permitted, except where not exposed.
   1. Provide bullnosed units at all exposed corners unless noted otherwise.
B. Types of block shall be as follows:
   1. Hollow load-bearing units shall meet ASTM C-90, Grade N, Type 1. Normal weight unless otherwise indicated.
   2. Where required, solid units or special designations for fire resistive walls and partitions shall have a minimum equivalent thickness and corresponding aggregate type determined utilizing the equivalent thickness calculation method as accepted by the Fire Marshal of the State of Michigan. Masonry units shall be supplied that meet the UL classification required for each fire-rated installation in the Work.
   3. Solid load-bearing units shall meet ASTM C-145, Grade N, Type 1.

2.02 REINFORCING:
A. See Section 04150 – Masonry Accessories for all Joint Reinforcing, Ties and Anchoring Devices.
B. See this Section for a generic Schedule for reinforcing in masonry wall construction.

2.03 LINTELS:
A. Where a new lintel is required for the support of a masonry wall spanning over any new opening in any new or existing masonry wall (including over doors, windows, pass-thrus, and M/E/P penetrations, etc.) AND IS NOT SPECIFICALLY CALLED-OUT ON THE DRAWINGS, provide a new lintel as per the following. Only those steel lintels called-out on the Drawings shall be provided by the Structural Steel Contractor.
B. For typical single-wythe masonry openings of minimal opening width, the contractor may provide lintels per the following if a Masonry Opening Schedule or other details to the contrary are not offered:
   1. Field assembled CMU lintel in color, pattern, size and texture matching adjacent CMU wall, with reinforcing bars as indicated, or required to span openings, place and filled with grout, or as otherwise noted.

a. For openings less than 40” – provide a CMU bond beam with (2) #5 bars extended a min. of 24” past face of opening. Grout solid all cores for 3 courses above opening and 24” past opening in each direction.

2. Precast units matching concrete masonry units with reinforcing bars indicated, or required to span openings.
   a. For openings less that 6’-8” in an 8” wythe, provide a 7-5/8” x 7-5/8” precast concrete lintel with 3000 psi min. with (2) #5 bars, 3” from lower face.
3. Steel lintel as required to span opening:
   a. For openings less that 4’-0” in an 8” wythe, provide a double L3.5x3.5x0.375, vertical legs concealed, hot-dip galvanized.
   b. For openings greater than 4’-0” and up to 6’-0” in an 8” wythe, provide a double L6x3.5x0.375, LLV, vertical legs concealed, hot-dip galvanized.

C. For typical multi-wythe masonry openings of minimal opening width, the contractor may provide lintels per the following if a Masonry Opening Schedule or other details to the contrary are not offered:
   1. Provide a lintel as specified for single-wythe conditions noted above for **each** wythe in a multi-wythe wall.

2.04 INTEGRAL WATER-REPELLANTS:

A. Provide Integral CMU Water-Repellent:
   1. Product: Integral liquid polymeric admixture mixed with concrete during production of CMUs. As Manufactured by:
      a. DRY-BLOCK – by W.R. Grace Construction Products.
      b. RainBloc – by ACM Chemistries.
      c. Or approved equal.
   2. Water Permeance of Masonry: Capable of achieving a Class E Rating when evaluated using ASTM E 514 with the test extended to 72 hours, using the rating criteria specified in ASTM E 514-74.
   3. Flexural Bond Strength of Masonry: An increase of minimum 10% in masonry flexural bond strength shall occur as a result of adding integral water-repellent CMU and mortar admixtures when compared to a control (containing no admixtures) CMU and mortar tested according to ASTM C 1357.
   4. Compressive Strength of Masonry Prisms: Maximum 5% decrease in compressive strength of prisms shall occur as a result of adding integral water-repellent CMU and mortar admixtures when compared to a control (containing no admixtures) CMU and mortar when tested according to ASTM C 1314.
   5. Drying Shrinkage of CMU: Maximum 5% increase in drying shrinkage of the CMU shall occur as a result of adding integral water-repellent CMU admixture when compared to a control (containing no admixtures) CMU when tested according to ASTM C 426.
   6. Coordinate with mortar admixtures (Section 04100) for water-repellant requirements.

2.05 CONCRETE MASONRY UNIT SEALERS:

A. Provide a CMU Water-Repellent sealer as required for each particular block type:
   1. Typical masonry units:
      a. Provide a solvent-free blend of silanes and oligomeric alkoxysiloxanes for applications to dense or porous masonry surfaces.
      b. Apply per manufacturer’s recommendations based on the porosity of masonry unit.
      c. Sure Klean Weather Seal Siloxane WB – by ProSoCo.
      d. or approved equal.
B. See Section 07190 – Water Repellant, for additional requirements.
C. Provide a 4’ x 4’ test area for each type of masonry for approval by Architect.

2.06 EXTERIOR NON-LOAD BEARING REINFORCED MASONRY WALL SCHEDULE:

A. The following table shall apply to all exterior non-load bearing concrete block masonry unit walls as a minimum requirement unless exceeded by drawing requirements.

B. All exterior load bearing concrete masonry walls will contain steel reinforcing. See Structural Drawings for additional information.

Wall Height	CMU Wall Width	Vertical Reinforcement (Full Wall Height)	As = In2/Ln. Ft.	Max. Horiz. Load
9'-4"	8"	No Reinforcement	-	15 PSF
12'-0"	8"	#4 @ 48" o/c	0.05	20 psf
13'-4"	8"	#4 @ 48" o/c	0.06	24 psf
16'-0"	8"	#5 @ 48" o/c	0.0775	25 psf
16'-0"	12"	#5 @ 48" o/c	0.0775	25 psf
18'-0"	12"	#4 @ 32" or #5 @ 48" o/c	0.0775	32 PSF
20'-0"	12"	#5 @ 40" o/c	0.093	30 PSF
24'-0"	12"	#5 @ 24" o/c	0.155	32 PSF

C. Notes:
1. **The Table above shall be used when no Structural Information is given to the contrary**.
2. Assume Design Value f'm = 1,500 psi, Fs = 24,000 psi, M or S mortar, medium weight CMU.
3. CMU wall supported height start from foundation and brace at each floor and/or roof level
4. Grout cells solid at vertical reinforcements – full height.
5. Increase wall reinforcement at the corner of all walls up to 10'0" horizontally by 50% of scheduled.
6. Place two (2) vertical bars of scheduled reinforcement at each side of each masonry opening.

2.07 INTERIOR NON-LOAD BEARING REINFORCED MASONRY WALL SCHEDULE:

A. The following table shall apply to all interior non-load bearing concrete block masonry unit walls as a minimum requirement unless exceeded by drawing requirements.

B. All interior load bearing concrete masonry walls will contain steel reinforcing. See Structural Drawings for additional information.

Wall Height	CMU Wall Width	Vertical Reinforcement (Full Wall Height)	As = In2/Ln. Ft.	Remarks
10'-0"	6"	No Reinforcement	-	
10'-0" - 18'-0"	6"	#3 @ 32" o/c	0.0412	Reinforcement can be eliminated if wall supported 10' Horizontally.
16'-0"	8"	No Reinforcement	0.06	
20-0"	8"	#3 @ 48" o/c	0.0275	
24'-0"	8"	#3 @ 48" o/c	0.0275	
22'-8"	12"	No Reinforcement	0.0775	
32'-0"	12"	#4 @ 72" o/c	0.0333	
36'-0"	12"	#4 @ 64" o/c	0.0375	

C. Notes:
1. **The Table above shall be used when no Structural Information is given to the contrary**.
2. Assume Design Value f'm = 1,500 psi, Fs = 24,000 psi, N mortar, light weight CMU.
3. All masonry wall design for lateral load = 5 PSF.
4. CMU wall supported height start from foundation and brace at each floor and/or roof level

5. Grout cells solid at vertical reinforcements – full height.
6. Vertical reinforcement to be placed in center of CMU wall UNO.
7. Place two (2) vertical bars of scheduled reinforcement at each side of each masonry opening

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Installer must examine the conditions under which the Work of this section is to be performed and notify Contractor in writing of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in manner acceptable to the Installer.
B. Beginning of installation means acceptance of existing conditions.

3.02 PREPARATION:

A. Lay out masonry walls on foundation walls, footings, or on concrete floors, coordinating with other trades for piping, conduit or other items stubbed up into the walls.
B. Consult other trades in advance and make provisions for built-in installation of their work in order to avoid cutting and patching. There are no “extras” for work that requires modification for equipment/material not coordinated prior to block installation.
C. Coordinate with manufacturer of any water-repellant block admixture for preparations or procedures required for installation.
D. All masonry block with a “Dry-Block” additive shall be only placed above grade to eliminate hydrostatic pressures from affecting the vapor-barrier integrity.

3.03 ERECTION:

A. Location of block types:
   1. Use hollow load-bearing units for load-bearing walls, partitions, piers, etc.
   2. Use blocks meeting fire-resistive rating requirements where indicated on Drawings and where required by applicable codes and regulations.
B. Lay out walls in advance for accurate spacing of bond patterns, with uniform joint widths and to properly locate openings, control joints, returns and offsets. Lay-up walls plumb and true and with courses level, accurately spaced and coordinated with other work. Avoid use of less-than-half-size units at corners, jambs and wherever possible at other locations.
   1. Masonry units shall be laid dry and in a running bond, unless otherwise noted.
   2. For masonry wall surfaces to receive thin set ceramic wall tile finish, maximum surface variation shall not exceed 1/8” in 10’-0”.
C. Cut masonry units with motor-driven masonry saw. Cut units as required to provide pattern shown and to fit adjoining work neatly. Use full units without cutting wherever possible.
D. Field Control joints: Provide where located on Drawings. If none shown, provide in accordance with best industry practice and as approved by Architect, and at a maximum of 28’ centers. Line up control joints with joints in foundation walls and joints in face brick. The joint shall be formed by placing building paper vertically into the open end of a stretcher and alternate half-stretcher block on one side of the joint, then filling the joint with concrete. Leave exposed faces of joints ready for caulking. Isolate masonry construction from structural framing with control joints.
E. Corner Control Joints: Provide a single (1) control joint within 32” horizontally of every masonry corner unless detailed otherwise. Coordinate with Architect for appropriate face of corner unless dictated by best practices.
F. Grout solid cells containing reinforcing bars in lifts subject to the Contract Documents and Masonry Institute’s recommendations. Do not use cell reinforcing to rod grout. At bearing locations, fill masonry cores with grout for a minimum of 12” either side of opening.
F. Mortar Bedding and Jointing:

1. Do not use mortar that has begun to set, or if more than 2-1/2 hours have elapsed since initial mixing. Retemper mortar during 2-1/2 hour period as required to restore workability.
2. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints.
3. Lay hollow CMU with full mortar coverage on horizontal and vertical face sheets; also bed webs in mortar in starting course on footings and foundation walls and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or to be filled with concrete grout.
4. Lay CMU units with 3/8" joints. Cut joints flush for concealed work or work to be covered by other materials. Tool joints of exposed CMU work as required by Architect.
5. During tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints at corners, openings and adjacent work to provide a neat, uniform appearance, properly prepared for application of sealant compounds.
6. Remove masonry units disturbed after laying; clean and re-lay in fresh mortar. Do not pound corners at jambs to fit stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar, and reset in fresh mortar.

G. Stopping and Resuming Work:
1. Rake back 1/2 masonry unit length in each course; do not tooth. Clean exposed surfaces of set masonry and remove loose masonry units and mortar prior to laying fresh masonry.

H. Built in Work:
1. As the work progresses, install built-in items specified under this and other sections of these Specifications. Fill in solidly with masonry around built-in items.
2. Where built-in items are to be embedded in cores of hollow masonry units, place layer of metal lath in joint below and rod mortar or grout into core.

I. Horizontal Joint Reinforcing:
1. Reinforce horizontal joints of CMU walls with continuous masonry wire reinforcing, spaced 16" o.c. vertically; except spaced 8" o.c. both immediately above lintel and immediately below sill for a distance of 2'-0" beyond jambs of the opening. Lap reinforcement minimum of 6". Do not bridge control joints except where specifically noted.

3.04 PROTECTION OF CONSTRUCTION:

A. Protect partially completed walls and the tops of all walls not enclosed or sheltered using a strong weather resistant cover at the end of each day and at all times when work is not in progress. Drape cover over the wall and extend a minimum of 2 ft. down both sides. Hold securely in place with clamps design for this purpose. Boards placed on top of wall construction are not acceptable

B. Shoring and Bracing:
1. Provide shoring as required to temporarily support masonry elements such as lintels, beams, arches and soffits. Do not remove until masonry has cured sufficiently to carry its own weight and any other temporary loads that may be placed on it during construction.
2. Provide temporary lateral bracing as required to support walls and other elements until permanent structural connections are made.
3. Provide temporary bracing as required for lateral support during grouting and grout curing operations.

C. Staining:
1. Prevent grout or mortar from staining face of masonry to be exposed or painted. Immediately remove any grout or mortar in contact with face of such masonry.
2. Turn scaffold boards on edge when work is not in progress to prevent staining of adjacent wall from rain splattering.
3. Protect base of wall from splattered mud or mortar with covers spread on ground and over wall surface.

D. Follow procedures for Cold Weather Masonry Construction as spelled out in Section 04050 as temperatures warrant.

3.05 FIELD QUALITY CONTROL:

A. Texture of block units and size of mortar joints shall be uniform throughout the project. Block with exposed chipped surfaces, or poorly tooled joints are not acceptable. If the wall is unacceptable to the Architect, and when so directed, it shall be the Contractor's responsibility to tear down and replace the block wall.
B. Tolerances: Max. variation from level - 1/4” in 10 ft.

3.06 CLEANING:

A. Clean exposed concrete masonry surfaces by dry brushing at end of each day's work and after final pointing to remove mortar spots, stains and droppings. Masonry surfaces to be exposed, either painted or unpainted shall be thoroughly cleaned. Leave surfaces free mortar and other stains.
B. Regular Concrete Block Masonry: On completion of pointing and re-pointing of all interior and exterior block work, clean thoroughly with "SureKlean 600", "Craft Klean", or similar prepared detergent only as expressly recommended by masonry unit manufacturer. Mix and apply in strict accordance with manufacturer's instructions. Test cleaning agent on 20 sq. ft. sample wall area in an inconspicuous area before beginning overall cleaning. Apply cleaner using fiber brushes and non-metallic scrappers, then rinse wall thoroughly with clean water.
    1. Job mixed or pre-prepared chemical cleaners containing acid are prohibited.
    2. All cleaning shall be done prior to installation of finished floors, wall mounted light fixtures, door hardware, aluminum doors and frames, or other items. Protect any such installed items from damage due to cleaning operations.

3.07 SEALING:

A. Seal all exterior masonry units as required according to manufacturer’s recommendations for each masonry type and condition, where required.

END OF SECTION 04200

SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK:

A. Section Includes:
   1. Miscellaneous framing and supports for the following:
      a. Counter supports
      b. Bench supports
      c. Applications where framing and supports are not specified in other sections.
   2. Miscellaneous steel trim

1.02 RELATED SECTIONS:

A. Section 06400 – Architectural Woodwork

1.03 QUALITY ASSURANCE:

A. Fabricator Qualifications: Firms experienced in successfully producing metal fabrications similar to that indicated for this Project, with sufficient production capacity to produce required units without causing delay in the Work.
B. Installer Qualifications: Arrange for installation of metal fabrications specified in this section by same firm that fabricated them.
C. Qualify welding processes and welding operators in accordance with AWS D1.1 "Structural Welding Code - Steel," D1.3 "Structural Welding Code - Sheet Steel", and D1.2 "Structural Welding Code - Aluminum."
D. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.
E. Engineer Qualifications: Professional engineer licensed to practice in jurisdiction where project is located and experienced in providing engineering services of the kind indicated that have resulted in the successful installation of metal fabrications similar in material, design, and extent to that indicated for this Project.

1.04 SUBMITTALS:

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
B. Product data for products used in miscellaneous metal fabrications, including paint products and grout.
C. Shop drawings detailing fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other sections.
D. Samples representative of materials and finished products as may be requested by Architect.
E. Welder certificates signed by Contractor certifying that welders comply with requirements specified under "Quality Assurance" article.
F. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project name, addresses, names of Architects and Owners, and other information specified.

1.05 PROJECT CONDITIONS:

A. Field Measurements: Check actual locations of walls and other construction to which metal fabrications must fit, by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of Work.

1.06 INCONSISTENCIES:

A. Refer to Section 00100 – Instructions to Bidders for General Contractor, Construction Manager, and/or sub contractor responsibilities pertaining to Specification inconsistencies.

PART 2 - PRODUCTS

2.01 MATERIALS AND COMPONENTS:

A. Metal Surfaces, General: For metal fabrications exposed to view upon completion of the Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, rolled trade names, roughness, and, for steel sheet, variations in flatness exceeding those permitted by reference standards for stretcher-leveled sheet.
B. Steel Plates, Shapes, and Bars: ASTM A 36.
C. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.
D. Welding Rods and Bare Electrodes: Select in accordance with AWS

2.02 FASTENERS:

A. General: Provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.
B. Bolts and Nuts: Regular hexagon head type, ASTM A 307, Grade A.
C. Lag Bolts: Square head type, FS FF-B-561.
D. Machine Screws: Cadmium plated steel, FS FF-S"92.
E. Wood Screws: Flat head carbon steel, FS FF-S-111.
F. Plain Washers: Round, carbon steel, FS FF-W-92.
G. Drilled-In Expansion Anchors: Expansion anchors complying with FS FF-S-325, Group VIII (anchors, expansion. [non-drilling]). Type I (internally threaded tubular expansion anchor); and machine bolts complying with FS FF-B-575, Grade 5.
H. Toggle Bolts: Tumble-wing type, FS FF-B-588, type, class, and style as required.
I. Lock Washers: Helical spring type carbon steel, FS FF-W-84.

2.03 PAINT:

A. Shop Primer for Ferrous Metal: Manufacturer's or fabricator's standard, fast-curing, lead-free, universal modified alkyd primer selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated, and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure complying with performance requirements of FS TT-P-664D.
B. Galvanizing Repair Paint: High zinc dust content paint for re-galvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21 035 or SSPC-Paint-20.
C. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12 except containing no asbestos fibers.
D. Zinc Chromate Primer: FS TT -P-645.

2.04 FABRICATION, GENERAL:

A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication. Weld corners and seams continuously, grind exposed welds smooth and flush. Comply with AWS recommendations.
B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.

C. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.
D. Temperature Change (Range): 100 deg F (55.5 deg C).
E. Shear and punch metals cleanly and accurately. Remove burrs.
F. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
G. Remove sharp or rough areas on exposed traffic surfaces.
H. Weld corners and seams continuously to comply with AWS recommendations and the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
I. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.
J. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
K. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
L. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware, screws, and similar items.
M. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

2.05 ROUGH HARDWARE:

A. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Division 6 sections.
B. Fabricate items to sizes, shapes, and dimensions required. Furnish malleable-iron washers for heads and nuts that bear on wood structural connections; elsewhere, furnish steel washers.

2.06 MISCELLANEOUS FRAMING AND SUPPORTS:

A. General: Provide steel framing and supports for applications indicated or which are not a part of structural steel framework, as required to complete work.
   1. Metal shapes, and assemblies indicated on the Architectural Drawings and not specified in other sections of the specifications or not indicated on the Structural Drawings, and framing supporting other components of the construction shall be provided in accordance with the provisions of this section and STRUCTURAL STEEL Section.
B. Fabricate units to sizes, shapes, and profiles indicated and required to receive adjacent other construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.

1. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.
2. Except as otherwise indicated, space anchors 24 inches o.c. and provide minimum anchor units in the form of steel straps 1-1/4 inches wide x 1/4 inch x 8 inches long.

C. Frames fabricated from structural steel shapes
1. Provide structural steel frames for door openings, exterior wall supports, ceiling hung toilet partition supports, frames around curbs, pits and other openings in floors and walls and at slab edges as indicated.
2. Construction frames to sizes indicated, of steel channels, bent plates, steel angles, steel plate or combinations of shapes as detailed. Frames shall be accurately squared, mitered, butted or coped as necessary and shall be full welded with all welds on exposed surfaces ground smooth. Concealed clip angles shall be welded or flush-riveted to the bottom of steel jamb members and provided with two (2) 1/2" diameter floor bolts for each clip angle. Provide sill members and slab edge angles where indicated.
3. Provide steel strap anchors of sizes and spacing indicated, welded to back of frames for anchoring into masonry, concrete or to steel as necessary. Where size and spacing of anchors are not shown, use 1/4" x 2" x 8" straps turned 2". Space anchors not more than 16" apart.
4. Provide spreaders between the bottom of steel jamb members and elsewhere as necessary. Remove spreaders after frames are properly set and securely anchored.

D. Galvanize miscellaneous framing and supports in the following locations:
1. Interior locations where indicated.

2.07 FINISHES, GENERAL:

A. Comply with NAAMM “Metal Finishes Manual” for recommendations relative to application and designations of finishes.
B. Finish metal fabrications after assembly.
C. Primer selected must be compatible with finish coats of paint specified, coordinate with requirements of Section 09900.
D. Shop Painting:
1. Prepare surfaces in accordance with the Steel Structure Painting Council's specifications.
2. Shop paint miscellaneous metal work, except members or portions of members to be embedded in concrete or masonry. Apply primer at a rate to provide uniform dry film thickness of 2.0 mils.

2.08 STEEL AND IRON FINISHES:

A. Galvanizing: For those items indicated for galvanizing, apply zinc-coating by the hot-dip process compliance with the following requirements:
1. ASTM A 153 for galvanizing iron and steel hardware.
2. ASTM A 123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip 0.0299 inch thick and heavier.

B. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
1. Exteriors (SSPC Zone 1 B): SSPC-SP6 “Commercial Blast Cleaning.”
2. Interiors (SSPC Zone 1A): SSPC-SP3 “Power Tool Cleaning.”

C. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finish or to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with requirements of SSPC-PA1 “Paint Application Specification No. 1” for shop painting.
1. Stripe paint all edges, corners, crevices, bolts, welds, and sharp edges.

PART 3- EXECUTION

3.01 PREPARATION:

A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.
B. Center nosings on tread widths with noses flush with riser faces and tread surfaces.
C. Set sleeves in concrete with tops flush with finish surface elevations; protect sleeves from water and concrete entry.

3.02 INSTALLATION, GENERAL:

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.
B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.
D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.
E. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work, and the following:
    1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
    2. Obtain fusion without undercut or overlap.
    3. Remove welding flux immediately.
    4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint or zinc chromate primer.

3.03 ADJUSTING AND CLEANING:

A. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 requirements for touch-up of field painted surfaces.
    1. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.
B. Touch-Up Painting: Cleaning and touch-up painting of field welds, bolted connections, and abraded areas of the shop paint on miscellaneous metal is specified in Division 9 Section “Painting’ of these specifications.
C. For galvanized surfaces clean welds, bolted connections and abraded areas and apply galvanizing repair paint to comply with ASTM A780.

END OF SECTION - 05500

SECTION 06070 - PRESSURE-TREATED WOOD PRODUCTS

PART 1 - GENERAL

1.01 SECTION INCLUDES:
- A. Preservative treatment of lumber and plywood.

1.02 RELATED SECTIONS
- A. Section 06100 - Rough Carpentry.
- B. Section 06114 – Wood Blocking and Curbing

1.03 REFERENCES
- A. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron And Steel Hardware; 1998.
- B. AWPA C20 - Structural Lumber -- Fire-Retardant Treatment by Pressure Processes; American Wood-Preservers' Association; 1999.
- C. AWPA C27 - Plywood -- Fire-Retardant Treatment by Pressure Processes; American Wood-Preservers' Association; 1999.
- D. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials; 1998.
- E. UL 723 – Standard for Test for Surface Burning Characteristics of Building Materials; Underwriters Laboratories Inc.; 1996.

1.04 SUBMITTALS
- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Preservative Treatment Certification: Treating plant's certification of compliance with specified standards, process employed, and preservative retention values.
- C. Fire-Retardant Treatment Certification: Treating plant's certification of compliance with specified requirements.

1.05 DELIVERY, STORAGE, AND HANDLING
- A. Protect wood products against moisture and dimensional changes, in accordance with instructions from treating plant.

1.06 WARRANTY
- A. See Section 01740 - Closeout Submittals, for additional warranty requirements.
- B. Fire-Retardant Treated Wood: Provide manufacturer's standard 20-year limited warranty.
- C. Preservative-Treated Wood: Provide manufacturer's standard lifetime warranty.

1.07 INCONSISTENCIES
- A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of this Specification, or between the Drawings and Specifications, the Contractor’s Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - PRODUCTS

2.01 MANUFACTURERS
- A. Provide preservative wood treatment that does not contain arsenic, chromium or other preservatives classified as hazardous by the Environmental Protection Agency.
  1. Preserve Pressure Treated Lumber: Arsenic and Chromium free pressure treated wood produced in accordance with ACQ Preserve Standard ACQ - 94 and the appropriate AWPA Standards (AWPA C1. AWPA C2, AWPA C4, AWPA C5, AWPA C9, AWPA C14, AWPA C15, AWPA C16, AWPA C17, AWPA C22, AWPA P5).
  2. Wood or wood products that are treated with CCA (Copper Chromium Arsenide) or other

pressure treatments that are toxic or hazardous are prohibited.

3. Substitutions: See Section 01600 - Product Requirements.
4. Provide wood treatment by or under license from Chemical Specialties, Inc., One Woodlawn Green, Suite 250, 200 E. Woodlawn Road, Charlotte, NC 28217. ASD. Tel: (800) 421-8661.
5. Preserve Pressure Treated Lumber: Arsenic and Chromium free pressure treated wood produced in accordance with ACQ Preserve Standard ACQ - 94 and the appropriate AWPA Standards (AWPA C1. AWPA C2, AWPA C4, AWPA C5, AWPA C9, AWPA C14, AWPA C15, AWPA C16, AWPA C17, AWPA C22, AWPA P5).

B. Provide fire-retardant treated wood, where required, as pressure impregnated lumber and plywood with chemicals complying with AWPA C20 and C27, respectively. Identify with appropriate classification marking of UL, US Testing, Timber Products Inspection, Inc., or other testing and inspection agency acceptable to authorities having jurisdiction.

2.02 MATERIALS

A. Dimension Lumber: As specified in Section 06100.
B. Structural Plywood: As specified in Section 06100.
C. Fasteners: For treated wood and where wood is in ground contact, subject to high relative humidity, or exposed to weather, provide steel fasteners with hot-dip zinc coating per ASTM A 153/A 153M.
D. Hot dipped galvanized or stainless steel fasteners and fittings are recommended. Anti-corrosion coatings applied to fasteners and fittings in contact with treated wood will enhance long term performance. Direct contact of Preserve treated wood with aluminum fasteners is not recommended. A list of approved fastener systems is available from your Preserve supplier.

2.03 PRESSURE TREATMENT OF WOOD

A. Preservative Treatment:
   1. Treatment: ACQ(R) Preserve(R).
      a. Use 0.25 lb/cu ft retention for above ground use.
      b. Use 0.40 lb/cu ft retention for ground contact use.
      c. Use 0.60 lb/cu ft retention for in-ground use.
   2. Kiln dry after treatment to 19 percent maximum moisture content for lumber and 15 percent for plywood.
   3. Treat wood to ‘above ground use’ in the following locations:
      a. In contact with roofing, flashing, or waterproofing.
      b. In contact with masonry or concrete.
      c. Within 18 inches (450 mm) of grade.
      d. Exposed to weather.
      e. Other locations indicated.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Framing and Sheathing: Comply with installation requirements in Section 06100.
B. Millwork and Trim: Comply with installation requirements in Section 06200.
   1. Interior Type A: For interior locations use fire-retardant chemical formulation that produces treated lumber and plywood with the following properties under conditions present after installation: No reductions in bending strength, stiffness, and fastener holding capacities.
   2. Exterior Type: Use for exterior locations and where indicated.
C. Fire-Retardant Treated Wood: End cuts and drilling are permitted. Do not rip or mill lumber or plywood after fire-retardant treatment.
D. Apply field treatment complying with AWPA M4 to cut surfaces of preservative treated lumber and plywood.

END OF SECTION

SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK:

A. Carpentry work not specified as part of other Sections and which is generally not exposed, except as otherwise indicated.
B. Carpentry for:
   1. Misc. lumber for attachment and support of other work.
C. Preservative and Fire-retardant Treatments – see Section 06070 – Pressure-Treated Wood Products.

1.02 RELATED SECTIONS

A. Section 06070 – Pressure-Treated Wood Products
B. Section 06200 - Finish Carpentry.
C. Section 06114 – Wood Curbs and Blocking
D. Section 06401 – Exterior Woodworking

1.03 QUALITY ASSURANCE:

A. Lumber Standard: Comply with PS 20.
B. Plywood Standard: Comply with PS 1.
C. Identification: Factory-mark each piece of lumber and plywood with type, grade, mill and grading agency.

1.04 INCONSISTENCIES:

A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of this Specification, or between the Drawings and Specifications, the Contractor's Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Lumber, General:
   1. Nominal sizes are indicated, except as shown be detail dimensions. Provide dressed lumber, S4S, with 19% maximum moisture content and time of dressing.
B. Framing Lumber (2" through 4" thick):
   1. For light framing (less than 6" wide), provide Construction Grade, any species.
   2. For structural framing (6" and wider and from 2" to 4" thick), provide #1 Hem-Fir or #2 Southern Pine or any other species and grade which meets or exceeds the following values:
      a. Fb (minimum extreme fiber stress in bending); 1,200 psi.
      b. E (minimum modulus of elasticity); 1,500,000 psi.

2.02 MISCELLANEOUS MATERIALS:

A. Fasteners and Anchorages:
   1. Provide size and type recommended by applicable standards, complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers and anchoring devices.
   2. Provide fasteners with a hot-dip zinc coating (ASTM A153) for treated lumber and where wood is in ground contact, subjected to high relative humidity, or exposed to weather.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. General:
   1. Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted.
   2. Securely attach carpentry work to substrate by anchoring and fastening as required by recognized standards. Countersink nail heads on exposed carpentry work and fill holes. Use finishing nails for finish work. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

B. Wood Framing, General:
   1. Provide framing members of sizes and on spacings shown on the drawings, and frame openings to comply with recommendations of "Manual for House Framing" of National Forest Products Association. Do not splice structural members between supports.
   2. Anchor and nail to comply with "Recommended Nailing Schedule" of "Manual for House Framing" and other recommendations of N.F.P.A. and other recommendations of N.F.P.A.

END OF SECTION - 06100

SECTION 06200 - FINISH CARPENTRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:
- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to the work of this section.

1.02 SECTION INCLUDES:
- A. Installation of doors, windows, etc.
- B. Installation of countertops –Solid Acrylic Polymer systems

1.03 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION:
- A. Section 08710 - Door Hardware: Supply of hardware attachment devices and related accessories to this section

1.04 RELATED SECTIONS:
- A. Section 06070 – Pressure-Treated Products
- B. Section 06100 – Rough Carpentry
- C. Section 08800 – Metal Doors and Frames
- D. Section 09900 - Painting: Painting and finishing of finish Carpentry items.

1.05 REFERENCES:
- A. ADA - Americans with Disabilities Act (ADA) - Cabinet Hardware
- B. ANSI A135.4 - Basic Hardboard
- C. ANSI A208.1 - Mat Formed Wood Particleboard
- D. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials
- E. AWI - Quality Standards, Custom Grade, unless otherwise noted
- F. AWPA (American Wood Preservers Association) C2 - Lumber, Timbers, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes.
- G. AWPA (American Wood Preservers Association) C20 - Structural Lumber Fire Retardant Treatment by Pressure Process
- H. BHMA A156.9 - Cabinet Hardware
- I. FS MMM A 130 - Adhesive, Contact
- J. HPMA (Hardwood Plywood Manufacturer's Association) HP American Standard for Hardwood and Decorative Plywood
- K. NEMA (National Electric Manufacturers Association) LD3 High Pressure Decorative Laminates.
- L. NHLA (National Hardwood Lumber Association)
- M. NWWDA (National Wood Window and Door Association) I.S.4 - Water Repellant Preservative Treatment for Millwork
- N. PS 1 - Construction and Industrial Plywood
- O. PS 20 - American Softwood Lumber Standard

1.06 SUBMITTALS FOR REVIEW:
- A. Submit under provisions of Section 01300.
- B. Shop Drawings
  1. On original hard-line drawings drawn to ¼”=1’-0” for composite plans; 1”=1’-0” for enlarged plans, elevations, and sections; and 3”=1’-0” for details, indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes/colors.
  2. Clearly show proposed joinery and installation details. For structurally critical connections, indicate design loading criteria and other pertinent information.
  3. Identify core material wherever used.

4. Indicate Products specified in Related Sections and account for coordination of all Mechanical and Electrical devices and accessories (where applicable).
5. Reference applicable Construction Document Details and/or Interior Elevations for each submitted unit.
6. See Quality Assurance, below.
7. Shop Drawings copied directly from the Contract Documents shall be returned with "No Action Taken".

C. Product Data: Submit manufacturer's product data for each product and process specified as work of this Section and incorporated into items of Finish Carpentry during fabrication, finishing and installation.

1.07 QUALITY ASSURANCE:

A. Perform work in accordance with AWI Custom Grade. [Premium Grade (high cost) and Economy Grade (low cost) options available - See AWI literature.]
B. Single-source responsibility: The Finish Carpentry contractor shall be responsible for all Products covered in this Section. Where Finish Carpentry assemblies are shown to be constructed using Products covered in Related Sections, such as light gauge metal framing, miscellaneous steel shapes, etc., the Finish Carpentry contractor shall also be responsible for the Related Section Products which are part of each assembly. All components of any Finish Carpentry assembly shall be furnished and installed by the Finish Carpentry contractor and shown on the Finish Carpentry shop drawings as such. Mechanical and electrical devices and accessories shall be excluded from this requirement. However, the Finish Carpentry contractor shall be responsible for all coordination of any mechanical or electrical device to be installed in any Finish Carpentry unit. All Mechanical and electrical devices and accessories shall be indicated on the Finish Carpentry shop drawings.

1.08 QUALIFICATIONS:

A. Fabricator: Company specializing in fabricating the products specified in this section with minimum three years documented experience.

1.09 REGULATORY REQUIREMENTS:

A. Conform to applicable code for fire retardant, flame spread and smoke developed requirements.

1.10 FIELD MEASUREMENTS:

A. Verify that field measurements are as indicated on reviewed shop drawings and as instructed by the manufacturer.
B. Provide templates for all countertops prior to fabrication.
C. Coordinate the work with plumbing and electrical rough-in and installation of associated and adjacent components.

1.11 CORRELATION AND INTENT:

A. Should a conflict occur in or between elements of the Contract Documents, the Contractor shall be deemed to have based his bid on the more expensive way of doing the work or of material supplied unless he shall have asked for and obtained a decision in writing from the Architect before submission of bids as to which method or materials will be required.

PART 2A – GENERAL LUMBER PRODUCTS:

2A.01. LUMBER MATERIALS:

A. Softwood Lumber: PS 20; Graded in accordance with AWI Custom; maximum moisture content of 12 percent; with consistent color and grain of quality suitable for transparent finish,
   1. smooth-4-sides (S4S) unless noted otherwise
   2. Species: Any one of the following, or as noted in the Documents:
      a. Douglas fir-larch

b. Southern yellow pine
c. Longleaf yellow pine
d. Mountain hemlock
e. Douglas fir
f. Hem-fir

B. Hardwood Lumber: Graded in accordance with AWI Custom; plain-sliced quarter-sawn rift cut, maximum moisture content of 11 percent; with [vertical] [mixed] [flat] [plain sawn] grain, of quality suitable for transparent finish.
1. Species: Any one of the following, or as noted in the Documents:
a. Oak
b. Birch
c. Poplar
d. Mahogany
e. Cherry
f. Select grade red (heartwood) “Lyptus” by Weyerhauser
2. Miscellaneous Hardwood Trims and Solid Edgings: Select grade White Oak absent of visible knots or any other surface irregularities. Select lumber coloration to match Hardwood Veneer coloration and grain pattern.

2A.02. PAINT GRADE LUMBER MATERIALS:
A. For lumber products which are not Hardwood but are exposed to view (concealed non-Hardwood materials are covered in the Rough Carpentry Section).
B. Softwood Lumber:
1. Caps and Casings: Poplar, Select grade absent of visible knots or other surface irregularities

2A.03. WOOD SHEET MATERIALS:
A. Softwood Plywood: PS 1 Grade N for premium exposure Grade A-B and/or C-D as noted; Graded in accordance with APA trademarks; Interior grade Exposure; SPF face and core.
1. Baltic birch plywood (multi-ply, A-B surfaced, furniture-grade plywood)
B. Wood Particleboard: ANSI A208.1; AWI standard, composed of wood chips, medium density, made with high waterproof resin binders; of grade and thickness to suit application; sanded faces. See Section 2.08 Certification for additional requirements if Applicable.

PART 2B– SOLID SURFACE PRODUCTS:

2B.01. SOLID ACRYLIC POLYMER FABRICATIONS:
A. Manufacturer:
1. E.I. du Pont de Nemours & Co., Inc., Corian® Surfaces.
2. Formica Solid Surfacing
3. Avonite
4. or equal.
B. Material shall be similar to:
1. Cast, acrylic; not coated, laminated or of composite construction, meeting ANSI Z124 1980
2. Material Thicknesses: 1/2 inch.
3. Colors: As selected by Architect from manufacturer's standard selection – Grades 1 thru 4.
4. The material shall meet the following characteristics:

PROPERTY	REQUIREMENT	TEST PROCEDURE
Tensile Strength	5000 psi min	ASTM D638
Tensile Modulus	1.0×10^6 psi min	ASTM D638
Flexural Strength	7000 psi min	ASTM D790
Flexural Modulus	1.0×10^6	ASTM D790

Elongation	0.3% min.	ASTM D638
Strain at Break	0.8% min.	ASTM D638
Hardness	90-Rockwell "M" scale 52-Barcol Impressor min.	ASTM D758
Thermal Expansion	3.5×10^{-6} in/in/deg C max 1.95×10^{-6} in/in/deg F max	ASTM D696
Color Stability	No change, min. 100 hours	NEMA LD3-3.10
Wear and Cleanability	Passes	ANSI Z124.3
Abrasion Resistance	No loss of pattern Weight loss (1000 cycles)=0.9 g. max.	NEMA LD3-3.01 ANSI Z124.3
Boiling water Surface Resistance	No Change	NEMA LD3-3.05
High Temperature Resistance	No Change	NEMA LD3-3.06
Conductive Heat Resistance	No Change	NEMA LD3-3.08
Impact Resistance Notched Izod Gardner	0.24 ft.-lbs./in. of notch min. 9.0 ft-lbs min.	ASTM D256, Method A ASTM D3029
Ball drop 1/4" sheet 1/2" sheet 3/4" sheet	 36" min. with 1/2 lb ball, no failure 140" min. with 1/2 lb ball, no failure 200" min. with 1/2 lb ball, no failure	**NEMA LD3-303**
Stain Resistance	Passes	ANSI Z124.3
Weatherability	No change, min. 1000 hours	ASTM D1499-84
Fungi and Bacteria	No Attack	ASTM G21, ASTM G22
Specific Gravity	1.6 min.	

Water Absorption Weight (% max.)	**24 hrs.** 0.05 (1/4") max. 0.10 (3/4") max.	**Long Term** 0.50 (1/4") max. 0.90 (3/4") max.	ASTM D570
Flammability			ASTM E84

	1/4"	**1/2"**	**3/4"**	
Flame spread	25 max	25 max	25 max	
Smoke Developed	30 max	30 max	30 max	
Class	1	1	1	

C. ACCESSORY PRODUCTS:
   1. Joint Adhesive: Manufacturer's standard two-part adhesive kit to create inconspicuous, non-porous joints by chemical bond.
   2. Panel Adhesive: Manufacturer's standard neoprene-based panel adhesive complying with ANSI A136.1-1967, Sealant: Manufacturer's standard mildew-resistant, FDA, UL listed silicone sealant in colors matching components.
   3. UL listed.

D. Counter Tops:
   1. 1/2 inch thick solid polymer acrylic material adhesively joined with inconspicuous seams, having edge details as detailed on the Drawings, complete with specified bowls.

2B.02. FASTENERS:

A. Fasteners: Of size and type to suit application; mill finish in concealed locations and chrome plated finish in exposed locations.
B. Concealed Joint Fasteners: Threaded steel.

PART 3 -EXECUTION

3.01 EXAMINATION:

A. Verify adequacy of backing and support framing.
B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 FABRICATION:

A. Fabricate to AWI Custom Grade standards.
B. Shop assemble work for delivery to site, permitting passage through building openings.
C. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.
D.

3.03 INSTALLATION:

A. Install work in accordance with AWI Quality Standard - **Custom Grade**.
B. Set and secure materials and components in place, plumb and level.
C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.
D. Install components and trim with fasteners appropriate for intended finish. All fasteners shall be concealed unless approved by Architect.
E. Install prefinished paneling with fasteners appropriate for intended finish. All fasteners shall be concealed unless approved by Architect.
F. Install hardware supplied by Section 08710 in accordance with manufacturer's instructions.

3.04 ADA REQUIRMENTS:

A. The following special requirements shall be met, where indicated on Documents or as required by Statute, for Barrier-Free Accessibility:
    1. Countertop height: with or without cabinet below, shall not exceed a height of 34 inches AFF, at a surface depth of 24 inches.
    2. Kneespace Clearance: to be minimum 27 inches AFF and 30 inches clear span width.
    3. Sink cabinet clearances: in addition to Notes Above – upper kneespace front depth to be no less than 8 inches, lower toe front depth to be no less than 8 inches, and lower toe front depth to be no less than 11 inches at a point 9 inches AFF.
    4. Lavatory piping scald-guard. Protective pipe covers by TrueBro, or equal, to cover all exposed undersink piping, where noted or required by ADA.

3.05 ERECTION TOLERANCES:

A. Maximum Variation from True Position: 1/16 inch.
B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION 06200

SECTION 07900 - JOINT SEALANTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to the work of this section.

1.02 DESCRIPTION OF WORK:

A. Joint sealants shall be neatly tooled within reveals (by others) per the “Typical Caulk/Sealant Joints” detail found in the Drawings.
B. The extent of each form and type of joint sealer, which shall also include ‘caulk’, is indicated on Drawings and by provisions of this section.
C. The applications for joint sealant/caulk as work of this section include, but are not limited to, the following:
    1. Exterior Conditions – typically “sealants”:
        a. Entire perimeter of all openings in building envelope, exterior side.
        b. Expansion/Control joints in masonry walls, and/or other exterior panels.
        c. Thresholds.
        d. Tile control and expansion joints
        e. All intersections of dissimilar materials.
    2. Interior Conditions – typically “caulks”:
        a. Entire perimeter of all openings in building envelope, interior side.
        b. Control joints in masonry walls, full height.
        c. Control joints of drywall and/or plaster partitions and when abutting masonry walls.
        d. Vertical joints of all intersecting interior masonry walls.
        e. Acoustical sealant application for gypsum board system. See Section 09250.
        f. Perimeters of all metal frames.
        g. Joints of all sills, countertops or plumbing fixtures
        h. All intersections of dissimilar materials.
D. Refer to Division 6 for architectural woodwork requirements; not work of this section.
E. Refer to Division 7 for roofing requirements; not work of this section.
F. Refer to Division 8 for glazing requirements; not work of this section.
G. Refer to Divisions 15 and 16 for joint sealers in mechanical and electrical work; not work of this section.
H. Sealants used in manufacture of insulating glass units, glazing materials, and all other products manufactured and sealed off site are not part of this section.

1.03 QUALITY ASSURANCE:

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum ten (10) years documented experience.
B. Installer Qualifications: Firm with not less than five (5) years documented experience in successful installation of the work of this section and on projects similar in scope and type. Installer must be capable of tooling joints per the “Typical Caulk/Sealant Joints” detail found in the Drawings.

1.04 SUBMITTALS:

A. Product Data: Submit manufacturer’s product indicating sealant specifications, handling/installation/curing instructions and performance test data sheets, limitations and color charts.
    1. Submit descriptive data listing back-up material, bond-preventative material, primer for each type of surface, solvents, cleaning agents, and wetting agents as recommended by sealing compound Manufacturer.

2. Manufacturer's printed instructions for each type of sealing compound to be used in the work covering surface preparation, mixing, recommended joint dimensions and sealing compound application.

B. Samples: Submit two (2) samples 6" long, minimum, illustrating a sample of the material (cured) in each color selected and specified tooling requirements.

C. The contractor shall be responsible for coordinating the choice of manufacturer, with available colors choices, to meet the color requirements of the Project. Therefore, the Architect shall be allowed to choose a manufacturer whose color is compatible for the particular Project installation.

1.05 PROJECT CONDITIONS:

A. Weather Conditions: Do not proceed with installation of liquid sealants under unfavorable weather conditions. Install elastomeric sealants when temperature is in lower third of temperature range recommended by manufacturer for installation.

B. Where possible, maintain temperature and humidity levels recommended by manufacturer during and after installation.

C. Do not install solvent curing sealants in enclosed building spaces.

1.06 GUARANTY-WARRANTY:

A. This Contractor shall and hereby does warrant, shall and hereby does guarantee all caulking work in this division against defective materials and workmanship for a period of two (2) years from date of final acceptance of said work.

B. Issuance of final certificate of payment is contingent upon delivery to architect of said written Guaranty-Warranty.

1.07 INCONSISTENCIES:

A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of this Specification, or between the Drawings and Specifications, the Contractor's Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - PRODUCTS

2.01 MANUFACTURER:

A. Acceptable Manufacturers - Subject to compliance with the following requirements, provide products by one of the following:
   1. Tremco, Inc.
   2. Sonneborn Building Products Div., ChemRex, Inc.
   3. Pecora Corp.
   4. Or Architect approved substitution.

B. Provide joint sealants, fillers and related materials that are compatible with one another and with the particular substrates, conditions of service and applications – as specified by sealant manufacturer based on testing and field experience.

C. Proprietary names used below are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other accepted manufacturers.

2.02 INTERIOR CAULKING:

A. Acrylic Latex Caulk: All caulking compounds for interior use, except as otherwise stated in this division or related referenced sections, shall be acrylic latex conforming to ASTM C-834-76. Caulking compound shall be acid resistant, waterproof, and paintable; shall not stain or injure materials in contact with same; shall not disintegrate at low temperature or liquefy at temperature of 140 degrees F.; shall not be affected by vibration. Compound shall form a thin, tough, elastic film on surface but remain permanently plastic underneath.
   1. Manufacturer's products approved for use are:

a. Sonolac®, Sonneborn
b. AC-20 + Silicone, Pecora Corp.
c. Tremco Acrylic™ Latex, Tremco, Inc.
d. Or Architect approved substitution.

B. Ceramic Tile Sealant joints: in ceramic tile, caulk with a sealant of type as recommended by primary tile manufacturer and as complies with TCA Handbook for Ceramic Tile Installation. Material may vary between vertical and horizontal applications and application of joint.
1. Color shall match color of adjacent tile grout joints.
2. Tile sealants for pool/showers and other continually wet environments shall be unique and specified elsewhere.

2.03 EXTERIOR SEALANTS:

A. General: Choose from the following materials as recommended by the manufacturer as appropriate for the following conditions and/or as required by the Architect.
1. Multi-Component Polyurethane: Multi-component, chemically cured, non-staining, non-bleeding, non-sagging. Shall withstand up to total 50% +/– movement. This applications shall withstand severe outdoor applications subject to intense heat, humidity or ultraviolet exposure. Cured sealant shall withstand substrate surface temperatures up to 250 degrees F. (maximum service temperature).
a. Manufacturer's products approved for use are:
1) Dymeric 240, Tremco, Inc.
2) Or Architect approved substitution.
2. One-Component Polyurethane: One-component, high-performance, moisture-cured, non-staining, non-bleeding, non-sagging. Shall withstand total movement up to total 25% +/– movement. Shall be weather resistant. Shall have a cured bead service temperature range of – 40 degrees F. to 180 degrees F.
a. Areas of usage shall be limited to perimeter caulking at windows, doors and panels. Do not use for building joints or other dynamically moving conditions.
b. Manufacturer's products approved for use are:
1) DyMonic, Tremco, Inc.
2) Or Architect approved substitution.
3. One-Component, Self-Leveling Urethane: One-component, self-leveling, moisture cured urethane joint sealant. Shall withstand total movement up to total 25% +/– movement. Shall have a cured bead service temperature range of – 40 degrees F. to 180 degrees F.
a. Areas of usage shall be limited to the filling and sealing of horizontal control and construction joints for on-grade concrete pedestrian and vehicular traffic surfaces, both tooled and saw cut joints. Not for use where joints are wider than 2”.
b. Manufacturer's products approved for use are:
1) Tremflex S/L, Tremco, Inc.
2) Or Architect approved substitution.
4. Butyl Sealant: One-component, non-skinning, non-staining on ordinary masonry. For joints where total movement of less than 10% can be expected. Shall have a cured bead service temperature range of – 40 degrees F. to 190 degrees F.
a. Areas of usage shall be limited to metal threshold installation, unless specifically indicated on Drawings or required by manufacturer’s recommendations for the work of other sections.
b. Manufacturer's products approved for use are:
1) Tremco Butyl Sealant, Tremco, Inc.
2) Or Architect approved substitution.
5. Multi-component, low-modulus silicone: Multi-component, silicone sealant offering color tint flexibility. For on-site tinting and color matching of exterior panels.
a. Areas of usage shall be perimeter and expansion caulking at windows, doors and panels, masonry, etc., where color matching is required by the Documents. Specially where building joints or other dynamically moving conditions occur.
b. Manufacturer's products approved for use are:
1) Tremco Spectrum 4-TS, Field-Tintable Silicone Sealant, Tremco, Inc.

2) Or Architect approved substitution.

2.04 JOINT FILLERS, PAVEMENT TYPES:

A. Bituminous and Fiber Joint Filler: Provide resilient and non-extruding type pre-molded bituminous impregnated fiberboard units complying with ASTM D1751; FS HH-F-341, Type I; or AASHTO M213.

2.05 CELLULAR/FOAM JOINT FILLERS AND SEALANT BACKERS:

A. Closed-Cell Synthetic Rubber Joint Filler: Expanded synthetic rubber complying with ASTM D1056, Class SC-E (oil-resistant and medium swell), of 2 to 5 psi compression deflection (Grade SCE 41); except provide 13 to 17 psi compression deflection (Grade SCE 44) where filler is applied under sealant exposed to traffic. Provide as needed.
B. Closed-Cell PVC Joint Filler: Flexible expanded polyvinyl chloride complying with ASTM D1667, Grade VE 41 BL (3.0 psi compression deflection); except provide higher compression deflection grades as may be necessary to withstand installation forces and provide proper support for sealants, if any. Provide as needed.
C. Closed-Cell Semi-Rigid Plastic Joint Filler: Semi-rigid, compressible non-staining, closed-cell plastic joint filler, recommended by manufacturer where low modulus of elasticity is required, but suitable for retaining poured concrete. Provide as needed.

2.06 ACCESSORIES:

A. Joint Primer/Sealer: Non-staining type primer/sealer shall be as recommended by the sealant manufacturer for use on the type of substrate material encountered, and shall have been tested for staining, durability, and dirt pick-up on the surfaces to be primed or sealed.
B. Joint Cleaner: Non-corrosive and non-staining type as recommended by sealant manufacturer; shall be compatible with joint forming materials.
C. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer to suit application. To be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.
C. Sealant Backer Rod: Compressible rod stock of polyethylene foam, polyurethane foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable, non-absorptive material as recommended by sealant manufacturer for back-up and compatibility with sealant and to suit application. Backer rod size shall be as required to achieve the compression recommended by sealant manufacturer.

2.07 COLOR SELECTION:

A. Unless otherwise noted, color of sealant/caulk shall be selected by the Architect from each manufacturer's full range of available colors, including custom colors for matching adjacent materials.
B. Have samples prepared for approval by the Architect prior to installation. Provide a textured finish of sealant when specified.

PART 3 - EXECUTION

3.01 INSPECTION:

A. Installer shall verify that surfaces, substrates, joint openings and conditions under which joint sealer work is to be performed are satisfactory and ready to receive work. Installer shall notify Contractor in writing of unsatisfactory conditions. Do not proceed with joint sealer work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.
B. Beginning of installation means Installer accepts existing surfaces and conditions.

3.02 PREPARATION:

A. The surface of joints to be sealed with gaskets, sealants or caulking compound shall be cleaned free of loose particles, oil, grease, water, frost, surface dust, coatings, and other foreign matter which might impair performance of joint sealing materials.

1. Porous materials such as masonry and concrete shall be cleaned by sandblasting, mechanical abrading, acid washing, or a combination of these methods, as required to provide a clean, sound surface free of laitance, coatings and loose particles. When acid washing method is used, all traces of acid shall be removed from the surface of porous materials by immediately washing with fresh water and all metal and glass in adjacent construction shall be protected from the acid. Methods used shall be compatible with sealant materials and comply with manufacturer's recommendations.

B. Prime or seal joint surfaces where required and where recommended by sealant manufacturer. Confine primer/sealant to areas of sealant bond. Do not allow spillage or migration onto adjoining surfaces.
C. Verify that joint backing and release tapes are compatible with sealants.
D. Measure joint dimensions and verify that joint filler and backer materials are sized to achieve joint width/depth ratios required by sealant manufacturer.

3.03 INSTALLATION:

A. Joint sealants shall be neatly tooled within reveals (by others) per the "Typical Caulk/Sealant Joints" detail found in the Drawings. Provide a tooled, concave joint configuration unless otherwise indicated or required.
B. All interior joints shall be caulked with acrylic latex, except control joints and expansion joints in masonry wall; such joints shall be caulked with exterior type sealant. All exterior joints shall be sealed with exterior type sealant.
C. Comply with manufacturer's printed instructions for sealant and sealant accessory preparation and installation, except where more stringent requirements are shown or specified or where appearance of joints is governed by the "Typical Caulk/Sealant Joints" detail found in the Drawings.
D. Apply sealant within manufacturer's recommended temperature and humidity ranges. Exterior sealing compounds shall not be applied in damp or rainy weather nor until the surfaces of joints to be sealed have thoroughly dried from the effects of such weather. Condensation shall not be allowed to form on the joint surfaces to receive sealing compounds. Ventilation shall be provided as required to prevent the formation of condensation on such surfaces.
E. Set joint filler units at depth or position in joint as required to coordinate with other work, including installation of bond breakers, backer rods and sealants. Do not leave voids or gaps between ends of joint filler units.
F. Install bond breaker where joint backing is not used.
G. Employ only proven installation techniques which will ensure that sealants are: deposited in uniform, continuous ribbons forced solidly into joint cavities so that full adhesion is achieved against contact faces of joint backing and joint faces; free from gaps, cracks, air pockets and foreign matter. For gun applications, select nozzle size to match joint width. **Except as otherwise indicated, finished sealant surfaces shall be struck flat no less than 1/8" below adjoining surfaces**. Where horizontal joints are between a horizontal and vertical surface, install joint to form a slight cove, so that joint will not trap moisture and dirt.
H. Do not overheat or reheat hot-applied sealants. Discard overheated material.
I. Install liquid-applied sealant to depths as shown, or, if not shown, as recommended by sealant manufacturer but within the following general limitations, measured at center (thin) section of beads (not applicable to sealants in lapped joints):
    1. For sidewalks, pavements and similar joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures: fill joints to a depth equal to 75% of joint width, but neither more than 5/8" deep nor less than 3/8" deep.
    2. For normal moving joints sealed with elastomeric sealants but not subject to traffic, fill joints to a depth equal to 50% of joint width, but neither more than 1/2" deep nor less than 1/4" deep.
    3. For joints sealed with non-elastomeric sealants and caulking compounds, fill joints to a depth in the range of 75% to 125% of joint width.

J. Do not allow sealants/caulks to overflow from confines of joints, to spill onto adjoining work, or to migrate into voids of exposed finishes. Clean adjoining surfaces by appropriate means necessary to eliminate evidence of spillage.
   1. Paper pressure-sensitive masking tape shall be placed on the finish surface on one or both sides of a joint cavity to protect adjacent finish surfaces from primer and sealing compound smears. Masking tape shall be removed within ten (10) minutes after the joint has been filled.

K. All materials that have been over-applied in exposed-to-view locations or in locations being further treated by other trades shall be neatly trimmed with a knife edge or other trimming tool.

L. Tolerances:
   a. As measured from any adjacent material face, edge, or line, tooled sealant/caulk joints shall not vary in depth by more than 1/16" in 1'-0".
   b. Exposed face of sealant/caulk shall be smooth and free of irregularities.

3.04 CLEANING AND ADJUSTMENT:

A. At conclusion of caulking and when directed, clean off all excess material from adjoining surfaces and materials. Repair or replace all defaced or disfigured finishes caused by work of this section. Leave entire installation in perfect condition.

3.05 CURING AND PROTECTION:

A. Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability.

B. Implement procedures required for cure and protection of joint sealers during construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at time of substantial completion. Cure and protect sealants in a manner that will minimize increases in modulus of elasticity and other accelerated aging effects. Replace or restore sealants that are damaged or deteriorated during construction period.

END OF SECTION 07900

SECTION 08100 - METAL DOORS AND FRAMES

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. All Drawings and general provisions of Contract, including General Conditions, Supplementary Conditions, Division 0, and Division 1 Specification sections apply to the Work of this Section.

B. Furnishing all labor, materials and equipment to fabricate hollow metal work shown on the drawings or specified herein, including delivery to the appropriate subcontractor for installation.

1. Steel, hollow metal doors and frames for exterior and interior door locations and for interior installations of borrowed-lites.
   a. Doors shall be seamless, hollow of composite construction.
   b. Frames shall be pressed steel for all typical openings.
      1) Welded unit type - typical.
2. Steel Hollow Metal doors and frames for interior locations requiring a specially constructed glazing system providing a safety and fire-rated assembly.
   a. Duration of Fire Rating – Doors: Capable of providing a fire rating for [60] [90] minutes– as required.
   b. Duration of Fire Rating – Window/Walls: Capable of providing a fire rating for [60], [90], [120] minutes – as required.
   c. Fire Resistive Rating: Glaze applications in occupancy or area separation walls and corridors where glazing exceeds 25% of the wall area, or as otherwise specified with a fire resistive assembly meeting the radiant heat requirements of ASTM E119. Per ASTM E119 and UL 263 requirements temperature on the non-fire side of glazing and framing at conclusion of fire test exposure shall be below 250°F above ambient room temperature.

1.02 RELATED WORK SPECIFIED ELSEWHERE:

A. Division 4 - Masonry
B. Section 06200 – Finish Carpentry
C. Section 08712 - Door Hardware
D. Section 08800 -Glass and Glazing
E. Section 09900 - Painting

1.03 QUALITY ASSURANCE:

A. Conform to requirements of ANSI A250.8-1998 (SDI-100), ANSI A151.1, and other specifications herein named. Submit test reports upon request.

B. Acoustical qualities: Minimum sound transmission classification of 28 as tested under ASTM designation E490 and ASTM designation E413.

C. Insulation properties: U factor .363 (R factor of 2.85) for honeycomb core, U factor for polystyrene core of .263 (R factor of 3.8), U factor for polyurethane core of 0.09 (R factor of 11.1).

D. Underwriters' Laboratories and Warnock Hersey, labeled fire doors and frames:

1. Investigate and test all labeled fire doors and frames in accordance with UL-10(b), ASTM E-152, NFPA 252, ANSI A2.2, or UL-10(c), UBC 7-2-1997.
2. Manufacture all labeled doors and frames under the UL factory inspection program and in strict compliance to UL procedures, and provides the degree of fire protection, heat transmission and panic-loading capability indicated by the opening class.
3. Manufacture Warnock Hersey labeled doors and frames to meet the specific requirements of that labeling agency's current procedure for the tested hourly rating designated and subject to inspection by representatives of the labeling agency.
4. Affix a physical label or approved marking to the fire door or fire door frame, at an authorized facility as evidence of compliance with procedures of the labeling agency.

E. All work specified herein shall be constructed and fabricated in accordance with the best practices of this trade and shall be free from defects impairing strength, durability or appearance, and of the best commercial quality for purposes as specified. All work shall be made with structural properties to sustain safety or withstand strains and stresses, to which they are normally subjected, true to detail, clean, straight with sharp defined profiles, with smooth finished surfaces.
F. It is imperative that application of paint and other corrosion resistant measures be followed explicitly

1.04 REFERENCE STANDARDS:
A. ASTM A-366 - Steel, Carbon, Cold-rolled Sheet, Commercial Quality.
B. ASTM A-569 - Steel, Carbon, Hot-rolled Sheet, Commercial Quality.
C. ASTM A-525 - Sheet Steel, Zinc Coated by the Hot-dip process.
D. ASTM A-591 - Class "A" Sheet Steel, Cold-rolled, Electrolytic Zinc-coated.
E. ASTM A653 - Standard Specification for steel sheet, zinc-coated, galvanized or zinc-iron alloy coated (galvanized) by hot dipped process.
F. NFPA 80 - Standard for Fire Doors and Windows.
G. UL 10B Fire Tests of Door Assemblies (Neutral test pressure)
H. National Association of Architectural Metal Manufacturers "CHM-1-74" and "Fire Rated custom Doors and Frames".
I. Underwriters' Laboratories, Inc., "Building Materials Directory", current edition.
J. Factory Mutual Approval Guide, current edition.
K. ASTM A 924 – Standard Specification for General Requirements for Steel, Sheet, Metallic Coated by the Hot-Dip Process
L. ASTM E-119
M. UL File No. R-19207, Design U533 – for all fire-rated doors and sidelites in a wall-rated assembly.
N. UL 1784 – Air Leakage Tests of Door Assemblies.

1.05 REGULATORY REQUIREMENTS:
A. Doors and frames: conform to applicable codes for fire ratings. Interior vertical stairwell doors: carry a minimum 250°F temperature rise rating in addition to the required fire rating.
B. Fire-rated Door, Sidelite and Transom Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection rating indicated
   1. Test Pressure: Test according to NFPA 252 or UL 10C. After 5 minutes into the test, the neutral pressure level in furnace shall be established at 40 inches or less above the sill.
   2. Oversize Fire-Rated Door Assemblies: For units exceeding sized of tested assemblies, provide certification by a testing agency acceptable to authorities having jurisdiction that doors comply with standard construction requirements for tested and labeled fire-protection-rated door assemblies except for size.
   3. Temperature-Rise Rating: At exit enclosures, provide doors that have a temperature-rise rating of 450 deg. F. maximum in 30 minutes of fire exposure.
C. Fire-Rated, Borrowed-Lite Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection rating indicated, based on testing according to NFPA 257 or UL 9. Label each individual glazed lite.
D. Smoke-Control Door Assemblies: Shall comply with NFPA 105 or UL 1784. Door and Frame assemblies shall meet UL - Air Leakage Tests of Door Assemblies as required.

1.06 SHOP DRAWINGS AND PRODUCT DATA:
A. General: Submit per Section 01300 – Submittals
B. Submit manufacturer's descriptive literature and shop drawings to the Architect for review before commencing fabrication. Shop drawings shall include door and frame schedule and door swings, and shall include all pertinent information.
   1. Submit shop drawings.

2. Indicate frame configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.
3. Indicate door elevations, internal reinforcement, closure method, and cutouts for glazing units and louvers.
4. Submit manufacturer's installation instructions under provisions of Section 01300.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Deliver all shop assembled units in perfect condition. Remove units from cardboard or plastic containers upon time of delivery to project. Store the units at the site in a dry place, under cover and on wood blocking.
B. Protect doors and frames from damage after installation and during subsequent construction. Damaged work shall be replaced by new work.

1.08 INCONSISTENCIES:

A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of this Specification, or between the Drawings and Specifications, the Contractor’s Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - PRODUCTS

2.01 GENERAL

A. Proprietary names and/or model numbers used to designate products or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other accepted manufacturers.
B. Pre-bid requests for approval of other products may be accepted in accordance with Section 00100 – Instructions to Bidders.
C. Post-Bid substitutions may be accepted in accordance with Section 01600 – Product Substitutions.
D. Acceptable manufacturers of hollow metal doors and frames subject to compliance with the specifications requirements are as listed below:
   1. American Steel Products Corporation
   2. Ceco Corp.
   3. Curries
   4. Fenestra
   5. Pioneer Industries
   6. Republic Builders Products
   7. Steelcraft

2.02 STEEL HOLLOW METAL DOORS AND FRAMES - GENERAL:

A. Fire rated doors shall be fabricated as required to meet U.L. and/or F.M. standards. See following Section for doors and frames in fire-rated ‘**Barrier’** assemblies.
B. Labels on doors and labeled or embossed frames where indicated on drawings shall reflect rating required; 3/4 hour - "C" label, 1-1/2 hour - "B" label, 3 hour - "A" label.
   1. All labeled doors and frames shall bear factory installed, permanent labels bearing the name of testing laboratory and rating. Do not paint any labels on frames or doors. See door schedule for locations.
   2. **All doors or sidelites in a system required to be rated in a fire-resistance assembly shall meet or exceed UL File No. R-19207, Design U533.**
   3. **Smoke and draft control doors complying with UL 1784 shall show the letter “S” on the fire rating label of the door. This marking shall indicate that the door and frame assembly are in compliance when listed or labeled gasketing is also installed.**
C. Astragals shall be provided for all pairs of labeled doors where not divided by a center mullion.

D. Manufacture frames and frame components from commercial quality carbon steel conforming to ASTM designation A568 and A569 or hot-dipped galvannealed steel having an A60 zinc-iron alloy coating conforming to ASTM designation A653.
   1. Treat galvannealed steel to insure proper paint adhesion. Steel component parts used in galvannealed doors and/or frames shall match galvanized specification.
   2. Provide 14 gauge channel fillers welded in place at door top when closing hardware is specified.
   3. Clean, phosphatized and finish all doors, frames and frame components with one coat of rust inhibiting prime paint in accordance with ANSI A250.10.
   4. Clean, phosphatized and finish all painted doors and frames with a rust-inhibiting paint in accordance with ANSI A250.3.

E. Door panels shall conform to one or more of the following standards:
   1. Hot-rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A569 and ASTM A568
   2. Cold-rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 366 and ASTM A 568.
   3. Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A 526, or drawing quality, ASTM A 642, hot-dipped galvanized in accordance with ASTM A 525, with A60 or G60 coating designation, mill phosphatized.

F. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-door frames and 2 silencers on heads of double-door frames.

G. Glass size shall not exceed limit of fire rating requirements. Notify architect before bidding if sizes will vary from those shown on drawings.

H. Doors and frames shall comply with NAAMM Specifications for Custom Hollow Metal Doors and Frames, and NAAMM Fire-rated Custom Metal Doors and Frames, except as modified by these specifications.

2.03 DOOR PANEL CONSTRUCTION:

A. Painted Door face sheets:
   1. All doors scheduled to be Hollow Metal - ‘Painted’ shall be Seamless Flush Type formed to two face sheets not less than No. 18 US gauge for interior panels and 16 US gauge for exterior panels for a typical 1-3/4" thick door.
   2. Interior Doors shall meet ANSI/SDI-100, Grade II, heavy-duty, Level 3 or 4 minimum with 18-gage cold-rolled sheet steel faces. Doors and components shall be manufactured from cold-rolled steel conforming to ASTM specification A366; [or] hot-dipped galvanized steel having an A60 zinc coating conforming to ASTM specification A924. Galvanizing steel shall be treated to insure proper paint adhesion.
   3. Exterior Doors shall meet ANSI/SDI-100, Grade III, heavy-duty; Level 4 minimum with 16-gage hot-dipped A60 galvanized steel faces, with galvanized hardware reinforcement. Galvanizing steel shall be treated to insure proper paint adhesion
   1. Graintech® Temperature Rise doors: Full-flush construction, fabricated from A60 hot-dipped galvannealed steel (see Section 2.01), 20, 18, or 16 gage. Mineral fiber core material shall comply with the 250° F maximum temperature rise rating.
   2. Clean, phosphatized and prime paint the wood grains face sheets with a stain absorbing primer. Stain the door faces and edges using conventional stains to achieve a [ash, birch, mahogany, maple, oak, walnut,] color. Clear coat after staining with a clear coating that contains UV inhibitors and provides graffiti resistance. Custom wood tone finishes available upon request.
   3. Ship doors to the job site adequately protected to prevent scratching and marring of the surfaces.

2.04 FRAME CONSTRUCTION - GENERAL:

A. Provide hollow metal steel integral frames, transoms, borrowed lights and sidelights as indicted on drawings. Form frames for all interior doors of No. 16 ga. commercial quality

carbon steel or hot-dipped galvannealed steel and for exterior doors of No. 14 ga hot-dipped galvannealed steel. The faces of frames at corners shall be welded. All required welding at exposed joints shall be continuous and shall be ground flush and smooth. All joints not welded shall be tight (no gaps) leaving only hairline cracks which will readily fill with paint.

1. Replacement Frames: Unless specifically noted or shown otherwise, new replacement frames shall match existing frames in profile. These frames are intended to replace door frames where no new door is required. All other requirements in this specification apply to these frames.
2. Drywall or KD frames are not acceptable for replacement frames in masonry walls.

B. Provide adjustable corrugated T-shaped strap anchors for masonry and concrete walls and approved type of anchors to fit steel studs or wood studs. All anchors shall be concealed type, 16 U.S. gauge steel and shall be equally spaced, at least three (3) per jamb for frames 7'-4" or less in heights; and four (4) per jamb for frames over 7'-4" to 8'-0" high. For frames over 8'-0" high, provide one (1) additional anchor for each 2'-0" or fraction thereof of additional height.
   1. Use special adjustable anchors as required for labeled frames.
C. Provide 16 ga. plaster guards over all mortised hardware preparations to prevent contact or mortar with hardware. Punch frames to receive rubber silencers.
D. This Contractor shall provide fixed and/or removable mullions where required.
E. Provide 12 ga. metal reinforcing channels where indicated and detailed on the drawings. Anchor channels to hollow metal frames as per manufacturer's recommendations. Anchor to floor at door jambs. Weld or bolt top of reinforcing channels to structural steel, steel joist or roof deck as conditions require or as indicated on details.
F. Provide removable spreaders or blocking during shipping, handling, and erection, to insure parallel alignment until frame is permanently anchored into the wall or partition.
G. Provide frames to accommodate glass transom and sidelight panels where indicated on drawings.

2.05 HARDWARE REQUIREMENTS:

A. All metal doors and frames which are furnished for this job shall be fabricated to receive all items and makes of hardware specified in Finish Hardware Section 08710/08712 of this Division.

2.06 ACCESSORIES:

A. Provide Louvers as indicated on the drawings with manufacturer’s standard blade and frame configuration, unless specified elsewhere. Color and finish to match door for both pre-finished and painted doors.

2.07 FINISH:

A. After fabrication, all surfaces to be thoroughly cleaned and free of all grease, oil, rust and other foreign contaminants.
B. Finish: After fabrication, all tool marks and surface imperfections in frames shall be removed, and exposed faces of all welded joints shall be dressed smooth; and all tool marks and surface imperfections in doors shall be dressed, filled and sanded as required to make all faces and vertical edges smooth, level and free of all irregularities. Frames and doors shall then be chemically treated to insure maximum paint adhesion and shall be coated on all accessible frame surfaces and exposed door surfaces with a rust-inhibitive primer that is fully cured before shipment.
   1. Clean, phosphatized and finish factory finish painted doors and frames with rust inhibiting paint capable of passing a 200-hour salt spray and 480-hour humidity test in accordance with ASTM designation B117 and ASTM designation D1735. Provide in accordance with ANSI/SDI A250.3, “Test Procedure and Acceptance Criteria for Factory Applied Finish Painted Steel Surfaces for Steel Doors and Frames”.
   2. Frames set in concrete or masonry shall receive one coat of asphalt mastic applied to inside of frames, and shall be fully grouted.

a. Fully grout the inside of all frames or, when an anti-freeze agent is used, coat with a fibered asphalt coating prior to grouting. Field apply the coating to a minimum 1/16" thickness

3. All hollow metal doors and frames are to receive two coats of paint in the field, all six sides.
4. See Section 09900 for field painting requirements.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Install door frames plumb and square, in correct locations indicated on drawings without distortion. Frames shall be securely and rigidly anchored to adjacent construction. Install doors and frames in accordance with ANSI/DHI A115.IG Installation Guide for Doors and Frames.
B. Install labeled doors and frames per NFPA-80.
C. Install doors and frames plumb and square, with 1/8" clearance between meeting edges of pairs of doors. At door sills, provide clearance as indicated or required for thresholds or for carpeting.
D. Anchoring:
   1. In masonry construction, locate 3 wall anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Acceptable anchors include masonry wire anchors and masonry Tee anchors. Provide four (4) wall anchors per jamb for frame over 7'–4" high.
   2. At existing concrete or masonry construction, provide three (3) completed opening anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb, set frames and secure to adjacent construction with bolts and masonry anchorage devices.
      a. Countersink anchors, and fill and make smooth, flush, and invisible on exposed frame faces.
   3. In metal stud partitions, install at least three (3) wall anchors per jamb at hinge and strike levels. In closed steel stud partitions, attach wall anchors to suds with screws.
E. Doors shall be properly hung so that they operate and latch satisfactorily. See Section 06200 for additional information concerning wood door installation requirements.
F. After installation, touch up and repair all scratched or damaged primed surfaces, using primer identical top shop coat used. Remove all evidence of paint runs, paint scale, or other imperfections.
G. Coordinate installation of glazing.
H. See Section 09900 for field painting of doors and frames.
I. Field verify all existing wall openings for fabrication and fit of all new frames. The Contractor shall be responsible to size new frames properly for fit into existing openings.

END OF SECTION - 08100

00871 HARDWARE SCHEDULE

SET NUMBER			HARDWARE		
HW SET: 01					
3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	MORTISE SET	8200-F05-J-L	628	SARG
1	EA	SURFACE CLOSER	4111S-CNS X 4110-18	689	LCN
1	EA	WALL STOP	WS33	626	IVE
1	EA	KICK PLATE	8400 10" X 34"	630	IVE
HW SET: 02					
3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	MORTISE SET	8200-59-J-L	628	SARG
1	EA	SURFACE CLOSER	4111S-CNS X 4110-18	689	LCN
1	EA	DOOR SWEEP	C627A	AL	NGP
1	EA	THRESHOLD	315	AL	NGP
1	EA	HOLD OPEN/STOP	490	626	ROCK
1	EA	KICK PLATE	8400 10" X 34"	630	IVE

SECTION 08712 - DOOR HARDWARE

PART 1 - GENERAL

1.01 WORK INCLUDED:
- A. All Drawings and general provisions of Contract, including General Conditions, Supplementary Conditions, Division 0, and Division 1 Specification sections apply to the Work of this Section.
- B. Hardware for wood, hollow metal and aluminum doors.
- C. Metal thresholds.
- D. Gasketing.

1.02 WORK FURNISHED BUT INSTALLED UNDER OTHER SECTIONS:
- A. Furnish templates to Sections 08110 and 08210 for door and frame preparation.
- B. Furnish cylinders and other hardware noted to Sections 08410 for factory installation on aluminum doors.
- C. Furnish all items of Finish Hardware specified, scheduled, shown or required herein except those items specifically excluded from this section of the specification.

1.03 RELATED SECTIONS:
- A. Drawings and general provisions of the contract, including general, supplementary and special conditions and division 1 specification sections apply to the work of this section.
- B. Section 06100 – Rough Carpentry.
- D. Section 08210 – Wood doors.
- E. Section 08111 - Metal Door and Frames.

1.04 REFERENCES:
- A. ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
- B. ANSI/NFPA 80 - Fire Doors and Windows.
- C. AWI - Architectural Woodwork Institute.
- D. BHMA - Builder's Hardware Manufacturers Association.
- E. DHI - Door and Hardware Institute.
- F. NAAMM - National Association of Architectural Metal Manufacturer.
- G. NFPA 101 - Life Safety Code.
- H. SDI - Steel Door Institute.
- I. UL - Underwriter's Laboratories Product Listings.

1.05 COORDINATION:
- A. Coordinate work of this section with other directly affected sections involving manufacturer and installer of any internal reinforcement for door hardware.
- B. Before hardware installation, general contractor/construction manager shall request a hardware installation seminar be conducted on the installation of hardware; specifically of locksets, closers, exit devices, overhead stops and coordinators. Manufacturer's representatives of the above products to present seminar. Seminar to be held at job site and attended by installers of hardware for aluminum, hollow metal and wood doors. Seminar to address proper coordination and installation of hardware, per finish hardware schedule for this specific project by using installation manuals, hardware schedule, templates, physical product samples and installation video's.
  1. Convene one week prior to commencing work of this Section.
  2. Coordinate with section 01039

1.06 QUALITY ASSURANCE:

A. Manufacturers: Companies specializing in manufacturing door hardware with minimum five years documented experience.
B. Hardware Supplier: Company specializing in supplying commercial door hardware with three years documented experience on projects of similar scope.
C. Hardware Supplier Personnel: Employ a qualified person to assist in the work of this section.
D. Furnish finish hardware to comply with the requirements of laws, codes, ordinances, and regulations of the governmental authorities having jurisdiction where such requirements exceed the requirements of the Specifications.
I. Provide textured surface on the exterior door lever, pull or other operating hardware of doors that lead to hazardous areas (areas that might be dangerous to a blind person) Ex. Loading platforms, boiler rooms, stages and the like.

1.07 REGULATORY REQUIREMENTS:

A. Conform to applicable codes for requirements applicable to fire rated doors and frames. Furnish finish hardware to comply with the requirements of laws, codes, ordinances, and regulations of applicable regulatory agencies, where such requirements exceed the requirements of this section.
B. Conform to applicable barrier free codes.
C. Conform to the applicable sections of Chapter 5 of NFPA 101.
D. Furnish finish hardware to comply with the requirements of the regulations for public building accommodations for physically handicapped persons of the governmental authority having jurisdiction and to comply with Americans with Disabilities Act.
E. Provide hardware for fire-rated openings in compliance with NFPA 80 and local building code requirements. Provide only hardware which has been tested and listed by UL for types and sizes of doors required and complies with requirements of door and door frame labels.
F. Where emergency exit devices are required on fire-rated doors that carry supplementary marking on the doors UL labels indicating "fire door to be equipped with fire exit hardware," provide UL label on exit devices indicating "Fire Exit Hardware".
G. Inform architect of any conflict between regulatory agency requirements and specified hardware.

1.08 CERTIFICATIONS:

A. Architectural hardware consultant shall inspect complete installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified herein.
B. Provide two copies of certifications to architect.

1.09 SUBMITTALS:

A. General: Submit per Section 01300 – Submittals.
B. Shop Drawings: Submit shop drawings that indicate locations, handing, mounting heights, reinforcement locations, and fastener locations of each type of hardware and accessory. Provide schedule of door hardware using same reference numbers for openings as those as shown on drawings.
C. Product Data: Provide product data on specified hardware.
D. Samples: Submit samples of hinges, latchsets, and other hardware items as requested by architect, illustrating style, color and finish.
E. Samples: Accepted samples may be incorporated into the work.
F. Manufacturer's Maintenance and Installation Data: Submit manufacturer's parts lists, templates, and installation instructions, including preparatory work and sequencing.
G. Certificates: Submit manufacturer's certificate under provisions of Section 01400 that hardware meets or exceeds specified requirements.
H. Include the Following:
   1. Preface sheet listing category only and manufacturer's names of items being furnished as follows:

CATEGORY	SPECIFIED	SCHEDULED
Hinges	Manufacturer A	Manufacturer B
Lock sets	Manufacturer X	Manufacturer X
Kick Plates	Open	Manufacturer Z

2. Hardware Locations: Refer to Article 3.1 B.2 Locations.
3. Opening Description: Single or pair, number, room locations, hand, active leaf, degree of swing, size, door material, frame material, and UL listing.
4. Hardware Description: Quantity, category, product number, fasteners, and finish.
5. Headings that refer to the specified Hardware Set Numbers.
6. Scheduling Sequence shown in Hardware Sets.
7. Product data of each hardware item, and shop drawings where required, for special conditions and specialty hardware.
8. Riser drawings, wiring drawings and system operation description.
9. "Vertical" scheduling format only. "Horizontal" schedules will be returned "Not Approved."
10. Typed Copy.
11. Double Spacing.
12. 8-1/2 x 11 inch sheets
13. U.S. Standard finish symbols or BHMA Finish symbols.

I. Key Schedule:
1. Submit detailed schedule indicating clearly how the Owner's final keying instructions have been followed.
2. Submit as an integral part of finish hardware schedule or as a separate keying schedule.

1.10 OPERATION AND MAINTENANCE DATA:
A. Submit operation and maintenance data under provisions of Section 01700.
B. Include data on operating hardware, lubrication requirements and inspection procedures related to preventative maintenance.

1.11 DELIVERY, STORAGE, AND HANDLING:
A. Deliver products to site under provisions of Section 01600.
B. Store and protect products under provisions of Section 01600.
C. Package hardware items individually, label and identify package with door opening code to match hardware schedule.
D. Deliver keys to owner by security shipment direct from hardware supplier.
E. Protect hardware from theft by cataloging and storing in secure area.

1.12 WARRANTY:
A. Provide ten-year warranty on general door hardware under provisions of Section 01700.
B. Provide ten-year warranty on door closers under provisions of Section 01700.
C. Warranty: Include coverage of general and miscellaneous hardware items.

1.13 EXTRA STOCK:
A. Provide ten extra key lock cylinders for each master keyed group under provisions of Section 01700.

1.14 MAINTENANCE MATERIALS:
A. Provide special wrenches and tools applicable to each different or special hardware component.
B. Provide maintenance tools and accessories supplied by hardware component manufacturer.

1.15 INCONSISTENCIES:

A. Refer to Section 00100 – Instructions to Bidders for General Contractor, Construction Manager, and/or sub contractor responsibilities pertaining to Specification inconsistencies.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

A. Hinges: Hager, Lawrence, McKinney, Soss, Stanley.
B. Pivots: Rixson, Dor-O-Matic, LCN.
C. Latch Sets: Schlage, Corbin, Russwin, Sargent
D. Flush Bolts: Glynn-Johnson.
E. Surface Bolts: Ives.
F. Push/Pulls: Any member of B.H.M.A.
G. Cylinder Locks: to match existing.
H. Exit Devices: Sargent, Von Duprin.
I. Closers ('Swing Free' arm type): LCN, Russwin.
J. Overhead Holders: Corbin, Glynn-Johnson, Russwin.
K. Automatic Bolts: Glynn-Johnson, Ives.
L. Gasketing: National Guard, Reese, Pemko.
M. Protection Plates: Any member of B.H.M.A.
N. Removable Mullions: Von Duprin, Sargent.
O. Lock Guards: Glynn-Johnson, Ives, Precision.
P. Coordinators: Door Controls, Glynn-Johnson, Ives.
Q. Floor and Wall Stops: Any member of B.H.M.A.
R. Thresholds, Sweeps and Astragals: Reese, National Guard Pemko.
S. Substitutions: Under provisions of section 01600.

2.02 SELECTIONS:

A. Hinges:
   1. Unless specified otherwise in sets furnish hinges of class and size as follows:
   2. Furnish class 5BB1 and size 4-1/2 x 4-1/2 inches.
   3. Numbers used are Ives. Equal products of Stanley, McKinney and Hager are acceptable.
B. Locksets and Latchsets - Mortise Type:
   1. Locksets shall be manufactured from heavy gauge steel, minimum lockcase thickness 1/8”, containing components of steel with a zinc dichromate plating for corrosion resistance.
   2. Locks are to have a standard 2 ¾” backset with a full ¾” throw two-piece stainless steel mechanical anti-friction latchbolt. Deadbolt shall be a full 1” throw, constructed of stainless steel.
   3. Lockcase shall be easily handed without chassis disassembly by removing handing screw on lockcase and installing in opposite location on reverse side. Changing of door hand bevel from standard to reverse hand shall be done by removing the lockcase scalp plate, and pulling and rotating the latchbolt 180 degrees.
   4. Lock trim shall be through-bolted to the door to assure correct alignment and proper operation. Lever trim shall have external spring cage mechanism to assist in support of the lever weight. When required, an ADA approved thumbturn shall be furnished with the lockset.
   5. Function numbers are Schlage. At lead lined doors, supply lead wrapped cases.
      a. Schlage L-9000
   6. Trim: as specified
   7. Provide strikes with extended lips where required to protect trim from being marred by latch bolt. Provide strike lips which do not project more than 1/8" beyond doorframe trim at single doors and have 7/8" lip to center at pairs of 1-3/4" doors. Provide wrought box strikes on all locks and latches.

C. Push and Pull Hardware:
   1. Push Plates: Plain design, wrought, .050 inches, square corners, beveled edges. If stile widths will not accept 8 inches, provide stile width less two inches.
   2. Pull Plates: Plain design, with wrought plate, .050 inches, square corners, beveled edges: 3/4 inch round rod, straight grip with 6 inch centers.
   3. Manufacturer: Provide push and pull hardware from any member of B.H.M.A.

D. Closers:
   1. Door closers shall have fully hydraulic, full rack and pinion action with a high strength cast iron cylinder. Cylinder body shall be 1 ½" in diameter, and double heat treated pinion shall be 11/16" in diameter with double D slab drive arm connection.
   2. Hydraulic fluid shall be of a type requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to –30 degrees F.
   3. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force for the physically handicapped. Hydraulic regulation shall be by tamper-proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed, and backcheck.
   4. All closers shall have solid forged steel main arms (and forged forearms for parallel arm closers).
   5. All surface mounted mechanical closers shall be certified to exceed ten million (10,000,000) full load cycles by a recognized independent testing laboratory.
   6. Powder coating finish to be certified to exceed 100 hours salt spray testing by ETL, an independent testing laboratory used by BHMA for ANSI certification.
   7. LCN Series as listed in sets.
   8. Refer to door and frame details and furnish accessories such as drop plates, panel adapters, spacers and supports as required to correctly install door closers. State degree of door swing in the hardware schedule.
   9. Barrier Free Manual Closers:
      a. All closers for openings that must meet the minimum requirements of the 1990 ADA act, in lieu of ANSI Standard A156.4, shall be sized in accordance with the applicable Reduced Opening Force table in the current LCN General Catalog.
      b. All size 1 manual closers shall provide less than 5 pounds opening force on a 36" door leaf and delay closing time in accordance with the 1990 ADA requirements.

E. Overhead Holders and Stops:
   1. Type, function and fasteners must be same as Glynn-Johnson specified. Size per manufacturer's selector chart. Plastic end caps, hold open mechanisms and shock blocks are not allowed. End caps must be finished same as balance of unit.
   2. Manufacture products using base material of Brass/Bronze for US3, US4, & US10B finished products and 300 Stainless Steel for US32 & US32D finished products.
   3. Type, function, and fasteners must be the same as Glynn-Johnson specified. Size per manufacturer's selector chart.
      a. Glynn-Johnson

F. Kick Plates:
   1. Furnish .050 inches thick 12" high x door width less 1-1/2" at single doors, and less 1" at pairs. Where glass or louvers prevent this height, supply with height equal to height of bottom rail less 2". Length 7 5/16" LDW at rod/latch guards.
   2. Kickplates shall be drilled and counter sunk for oval head, counter sunk screws. Pan head not acceptable.
      a. Any B.H.M.A. manufacturing product meeting above is acceptable.

G. Wall Stops:
   1. Ives - WB33.
   2. B.H.M.A. L12011 or L12021. Length to exceed projection of all other hardware.

H. Miscellaneous:
   1. Furnish items not categorized in the above descriptions but specified by manufacturers names in Hardware Sets.

I. Fasteners:

1. Furnish fasteners of the proper type, size, quantity, and finish. Use machine screws and expansion shields for attaching hardware to concrete or masonry, and wall grip inserts at hollow wall construction. Supply sex bolts for closers at lead-lined or UL listed wood doors only. Supply sex bolts when U.L. listing of wood doors requires them. Furnish machine screws for attachment to reinforced hollow metal doors and frames and reinforced aluminum doors and frames. Furnish full thread wood screws for attachment to solid wood doors and frames. "TEK" type screws are not acceptable.

2.03 KEYING:

A. Door Locks: Grand master keyed including control keying for core removable cylinders. Coordinate exact keying requirements with Owner's Representative.
B. Supply keys and master keys as directed by owner, but in no case shall less than two keys be provided for each lock or lock cylinder.

2.05 FINISHES:

A. Finishes: Generally, Dull Chrome, US26D, unless otherwise identified in schedule.

PART 3 - EXECUTION

3.01 INSPECTION:

A. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.
B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION:

A. Install hardware in accordance with manufacturer's instructions and to template dimensions.
B. Use the templates provided by hardware item manufacturer.
C. Mounting heights for hardware from finished floor to center line of hardware item:
   1. Hinges: Door manufacturer's standard
   2. Flush Bolt Levers: 72" and 12".
   3. Surface Bolt Knobs: 72" and 12".
   4. Deadlatch Cylinders: 43".
   5. Push/Pull Units: 40" (pull portion).
   6. Locksets and Latchsets: Door manufacturer's standard.
   7. Panic Devices: Manufacturer's templates.
D. Conform to ANSI A117.1 and applicable local or state barrier free codes for hardware positioning requirements for the handicapped.
E. Final Adjustment:
   1. Provide the services of a representative to inspect material furnished and its installation and adjustment, to make final hardware adjustment, and to instruct the Owner's personnel in adjustment, care and maintenance of hardware.
   2. Locksets, closers and exit devices shall be inspected by the factory representative and adjusted after installation and after the HVAC system is in operation, to insure correct installation and proper adjustment in operation. The manufacturer's representative shall prepare a written report stating compliance, and also recording locations and kinds of noncompliance. The original report shall be forwarded to the Architect with copies to the Contractor, hardware distributor, hardware installer and building owner.

3.03 ADJUSTMENT:

A. Provide final adjustment of hardware items by a factory authorized representative of the hardware supplier at substantial completion, and again within six months of occupancy.

3.04 SCHEDULE:

See Section 08710 for Hardware Schedule.

END OF SECTION 08712

SECTION 08800 - GLASS AND GLAZING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. All Drawings and general provisions of Contract, including General Conditions, Supplementary Conditions, Division 0, and Division 1 Specification sections apply to the Work of this Section.

1.02 DESCRIPTION OF WORK:

B. Furnishing all materials, labor and equipment to provide and install glass and glazing as shown on the Drawings, Schedules and specified herein.
   1. Definitions: "Glass" includes both primary and fabricated glass products as described in FMGA "Glazing Manual" and, for this project, extend to opaque infill panels to be glazed into window frames. "Glazing" includes glass installation and materials used to install glass.

C. Types of work in this section include glass and glazing for:
   1. Replacement of glazing in existing exterior metal fames.

D. This section includes specifications for insulating glass and opaque infill panels.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

A. Section 08100 - Metal Doors and Frames.
B. Section 09900 - Painting

1.04 SYSTEM PERFORMANCE:

A. Provide glass and glazing that has been produced, fabricated and installed to withstand normal temperature changes, wind loading, impact loading (where applicable), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glass and glazing materials, and other defects in the work.

B. Glass Design: thickness designations are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:
   1. Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:
      a. Specified Design Wind Loads: not less that wind loads applicable to Project as required by ASCE 7 “Minimum Design Loads for Building and Other Structures”: Section 6.0 ‘wind loads’.
      b. Maximum Lateral Deflection: for the following types of glass supported on all 4 edges, provide thickness required that limits center deflection at design wind pressure to 1/50 times the short side length or 1 inch, whichever is less.
         1) For monolithic-glass lites heat treated to resist wind loads.
         2) For insulating glass.
         3) For laminated-glass lites.

C. Thermal Movements: Provide glazing that allows for thermal movements resulting from the following maximum change in ambient and surface temperatures acting on glass framing members and glazing components.

1.05 REFERENCE STANDARDS:

A. Products and materials shall comply with the following standards:
   1. FS DD-G-1403B - Glass, Plate, Sheet, Figured and Spandrel (Heat Strengthened and Fully Tempered).
   2. FS DD-M-411 - Mirror Glass.
   3. SIGMA No. 65-7-2 - Specification for Sealed Insulating Glass Units.
   4. ANSI Z97.1 - for Safety Glazing Material.

5. ASTM E-546 - Test for Frost Point of Sealed Insulating Glass Units.
6. ASTM D-576 - Test for Dew/Frost Point of Sealed Insulating Glass Units.
7. UL Building Materials Directory Classification (KCMZ) for Glazing of Fire Rated Doors and Windows.
8. Non-Fire-Rated Safety Glass: Clear, 1/4" tempered; shall meet or exceed ASTM C1048, 16CFR-1201, ANSI Z97.1

1.06 QUALITY ASSURANCE:

A. Glazing Standards: Comply with recommendations of Flat Glass Marketing Association (FMGA) "Glazing Manual" and "Sealant Manual" except where more stringent requirements are indicated. Refer to those publications for definitions of glass and glazing terms not otherwise defined in this section or other referenced standards.
B. Safety Glazing Standard: Where safety glass is indicated or required by authorities having jurisdiction, provide type of products indicated which comply with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category II materials.
C. All materials and glazing shall comply with Federal, State and Local Regulations, Codes, and Ordinances; the more stringent requirements shall govern.
D. Fire-Resistance-Rated Wire Glass: Where indicated and allowed by Code, provide wire glass products that are identical to those tested per ASTM E 163 (UL 9) are and listed by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.
E. Insulating Glass Certification Program: Subject to compliance with requirements, provide insulating glazing units permanently marked either on spacers or on at least one component pane of units with appropriate certification label of inspecting and testing organization indicated below.
   1. Insulating Glass Certification Council (IGCC).
   2. Associated Laboratories, Inc. (ALI).
F. Opaque Infill Panels: Laminating to be done by a manufacturer with not less than twenty-five (25) years experience.
G. Single Source Responsibility: Provide materials obtained from one source for each type of glass and glazing product indicated.

1.07 SUBMITTALS:

A. General: Submit per Section 01300 – Submittals.
B. Product Data: Submit manufacturer's technical data for each glazing material and fabricated glass product required, including installation and maintenance instructions.
C. Samples: Submit, for verification purposes, two 12" square samples of each type of glass and panel product indicated except for clear single pane units, and 12" long samples of each color required (except black) for each type of sealant or gasket exposed to view.
D. Certification: Submit certificates from respective manufacturers attesting that glass and glazing materials furnished for project comply with requirements.
   1. Separate certification will not be required for glazing materials bearing manufacturer's permanent labels designating type and thickness of glass, provided labels represent a quality control program involving a recognized certification agency or independent testing laboratory acceptable to authorities having jurisdiction.
E. Test Reports: Submit sealant-substrate adhesion and sealant compatibility test reports, including glazing sealant manufacturer's findings and recommendations.

1.08 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Deliver glass materials in perfect condition. Glazing compounds and sealants shall be in manufacturer's unopened, labeled containers.
B. All glass materials and glass products shall be stored in the dry, under cover, and on wood blocking. Store and handle materials to comply with manufacturer's directions and as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture including condensation, of temperature changes, of direct exposure to sun, and from other causes.

1.09 PROJECT CONDITIONS:

A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing material manufacturer or when joint substrates are wet due to rain, frost, condensation or other causes. Install glazing sealants only when temperatures are in middle third of manufacturer's recommended installation temperature range.

1.10 WARRANTY:

A. Insulating Glass Units: Glass shall be warranted from visual obstruction due to internal moisture for a period of ten (10) years.
B. Opaque Infill Panels:
   1. Provide manufacturer’s 25-year finish warranty covering porcelain finish fading, cracking and crazing.
   2. Provide manufacturer’s 25-year warranty covering panel delamination.

1.11 INCONSISTENCIES:

A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of this Specification, or between the Drawings and Specifications, the Contractor’s Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - PRODUCTS

2.01 MANUFACTURERS, GENERAL:

A. Proprietary names and/or model numbers used to designate products or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other accepted manufacturers.
B. Pre-bid requests for approval of other products may be accepted in accordance with Section 00100 – Instructions to Bidders.
C. Post-Bid substitutions may be accepted in accordance with Section 01600 – Product Substitutions.

2.02 GLASS PRODUCTS, GENERAL:

A. All primary glass, fabricated glass products and opaque infill panels shall be new, up to grade requirements and free of bubbles and other imperfections. Each piece of glass shall bear the manufacturer's label, indicating quality and grade. Labels shall remain intact until final acceptance and cleaning, unless otherwise recommended by manufacturer. All glass must comply with all regulating codes.
B. Sizes: Fabricate glass, fabricated glass products and opaque infill panels to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer. Perform field measurements to determine sizes for existing openings. Provide thicknesses indicated or, if not otherwise indicated, as recommended by glass manufacturer for application indicated.

2.03 PRIMARY GLASS MATERIALS:

A. GENERAL:
   1. Insulated, Obscure Safety Glass.
      a. Acceptable Manufacturers: Subject to compliance with requirements, provide products from one of the following for each type:
         i. PPG Industries Inc.
         ii. LOF, Libbey-Owens-Ford Co.
         iii. Guardian Industries Corp.
         iv. Viracon

B. SAFETY GLASS:
   1. Safety Glazing Standard: Where safety glass is indicated or required by authorities having jurisdiction, provide type of products indicated which comply with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category II materials.
      a. Acceptable Manufacturers: Subject to compliance with requirements, provide products from one of the following for each type:
         i. Guardian Industries Corp.
         ii. Temp Glass, 1-800-537-4064
         iii. Viracon

2.04 INSULATING GLASS UNITS:

A. System Performance: Provide insulating glazing that has been produced, fabricated and installed to withstand normal temperature changes, wind loading, impact loading (where applicable), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of insulating glazing materials, and other defects in the work. Deterioration of insulating glazing is defined as: failure of hermetic seal due to other causes than breakage which results in the intrusion of dirt or moisture; internal condensation or fogging at temperatures above -20 degrees F (-28 degrees C); deterioration of protected internal glass coating (if any) resulting from seal failure; and other visual evidence of seal failure or performance.

B. Insulating Glazing Standard: Provide pre-assembled sealed insulating glass units that comply with requirements designated below:
   1. ASTM E 773
   2. ASTM E 774
   3. IGCC CBA Rating

C. Provide pre-assembled units consisting of organically sealed panes of primary glass materials as specified enclosing a hermetically sealed dehydrated air space; comply with requirements indicated for glass characteristics, air space, sealing system, sealant, spacer material, corner design, and desiccant.
   1. Overall Thickness: 1 inch nominal.
   2. Outboard (Exterior) Pane:
      a. 1/4" clear float glass. Provide tempered safety glass where indicated on Drawings and Schedules, or where required by code.
   3. Air Space Thickness: 9/16” where pattern (obscure) glass is used.
   4. Inboard (Interior) Pane:
      a. (2) 1/8" laminated safety glass, with obscure pattern.
   5. Sealing System: Manufacturer's standard.
   6. Spacer Material: Aluminum. Color to be black.
   7. Desiccant: Manufacturer's standard material.
   8. Corner Design: Manufacturer's standard

D. Sizes: Fabricate insulating glazing to sizes required for glazing openings indicated on Drawings and Schedules, with edge clearance and tolerances complying with recommendations of insulated glass manufacturer.

2.05 GLAZING SEALANTS:

A. General: Comply with recommendations of sealant and glass manufacturers for selection of glazing sealants which have performance characteristics suitable for applications indicated and conditions at time of installation.

B. Compatibility: Select sealants with proven compatibility with surfaces contacted in the installation and under service conditions indicated, as demonstrated by testing and field experience.

C. Colors: Provide color of exposed sealants indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

D. Silicone Glazing Sealant: Single component elastomeric silicone sealant complying with FS TT-S 001543, Class A, nonsag; and with ASTM C 920, Type S, Grade NS, Class 25, Use G and, as applicable to use indicated, Uses A and O; and with the following requirements:
   1. Low-Modulus Glazing Sealant: Manufacturer's standard low-modulus non-acid curing sealant that can withstand an increase and decrease of 50% of joint width as measured at time of application when tested per ASTM C 719.
   2. High-Modulus Silicone Glazing Sealant: Manufacturer's standard high-modulus acid-curing sealant.
E. 2-Part Polysulfide Glazing Sealant: Polysulfide elastomeric sealant complying with FS TT-S-00227, Class A, Type 2; and with ASTM C 920, Type M, Grade NS, Class 25, Use G and, as applicable to use indicated, Uses A and O.
F. Acrylic Glazing Sealant: Acrylic terpolymer or polypropenate solvent-based thermoplastic 1-part sealant complying with FS TT-S-00230, Class B, Type II; and with ASTM C 920, Type S, Grade NS, Class 12 1/2, Use G and, as applicable to use indicated, Uses A and O.
G. Preformed Butyl-Polyisobutylene Glazing Tape: Blend of butyl-polyisobutylene rubber with a solids content of 100%, in extruded tape form, complying with AAMA 807.1, packaged on rolls with a release paper on side, with or without continuous spacer rod as recommended by manufacturers of tapes and glass for application indicated.
H. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following.
   1. Low-Modulus Silicon Glazing Sealants:
      a. Dow Corning Corp.
      b. General Electric.
      c. Perrenator.
      d. Woodmont Products, Inc.
   2. High-Modulus Silicone Glazing Sealants:
      a. Tremco.
   3. 2-Part Polysulfide Glazing Sealants:
      a. Sonneborn Building Products Div., Rexnord Chemical Products, Inc.
      b. Woodmont Products, Inc.
   4. Acrylic Glazing Sealants:
      a. Tremco.
   5. Preformed Butyl-Polyisobutylene Glazing Tape:
      a. Tremco.

2.06 MISCELLANEOUS GLAZING MATERIALS:

A. Compatibility: Provide materials with proven record of compatibility with surfaces contacted in installation.
B. Cleaners, Primers, and Sealers: Type recommended by sealant or gasket manufacturer.
C. Setting Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealants, 80 to 90 Shore A durometer hardness.
D. Spacers: Neoprene, EPDM or silicone blocks, or continuous extrusions, as required for compatibility with glazing sealant, of size, shape and hardness recommended by glass and sealant manufacturers for application indicated.
E. Edge Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealant, of size and hardness required to limit lateral movement (side-walking) of glass.
F. Compressible Filler Rods: Closed-cell or waterproof jacketed rod stock of synthetic rubber or plastic foam, flexible and resilient, with 5-10 psi compression strength for 25% deflection.

PART 3 - EXECUTION

3.01 INSPECTION:

A. Require Glazier to inspect work of glass framing erector for compliance with manufacturing and installation tolerances, including those for size, squareness, offsets at corners; for presence and functioning of weep system; for existence of minimum required face or edge

clearances; and for effective sealing of joinery. Obtain Glazier's written report listing conditions detrimental to performance of glazing work. Do not allow glazing work to proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION:

A. Clean glazing channels and other framing members to receive glass, immediately before glazing. Remove coatings that are not firmly bonded to substrates. Remove lacquer from metal surfaces where elastomeric sealants are indicated for use.

3.03 GLAZING, GENERAL:

A. Comply with combined printed recommendations of glass manufacturers, of manufacturers of sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards. Glazing performed at temperatures below 40 degrees F. shall be done in accordance with manufacturer's recommendations.
B. Glazing channel dimensions as indicated in details are intended to provide for necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by job conditions at time of installation.
C. Protect glass from edge damage during handling and installation; use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass with flares or bevels along one horizontal edge that would occur in vicinity of setting blocks so that these are located at top of opening. Remove from project and dispose of glass units with edge damage or other imperfections of kind that, when installed, weakens glass and impairs performance and appearance.
D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by pre-construction sealant-substrate testing.

3.04 GLAZING:

A. Install setting blocks of proper size in sill rabbet, located one quarter of glass width from each corner, but no closer than 6", unless otherwise required. Set blocks in thin course of sealant that is acceptable for heel bead use.
B. Provide spacers inside and out, of correct size and spacing to preserve required face clearances, for glass sizes larger than 50 united inches, except where gaskets or glazing tapes with continuous spacer rods are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.
C. Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.
D. Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.
E. Provide compressible filler rods or equivalent back-up material, as recommended by sealant and glass manufacturers, to prevent sealant from extruding into glass channel weep systems and from adhering to joints back- surface as well as to control depth of sealant for optimum performance, unless otherwise indicated.
F. Force sealants into glazing channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.
G. Tool exposed surfaces of sealants to provide a substantial "wash" way from glass. Install pressurized tapes and gaskets to protrude slightly out of channel, so as to eliminate dirt and moisture pockets.

3.05 PROTECTION AND CLEANING:

A. Protect exterior glass from breakage immediately upon installation by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.
C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less often than once a month, for build-up of dirt, scum, alkali deposits or staining. When examination reveals presence of these forms of residue, remove by method recommended by glass manufacturer.
D. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including damage by natural causes, accident and vandalism.
E. Wash glass on both faces not more than four days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Wash glass by method recommended by glass manufacturer.
F. Replace any insulated glass that shows fogging in the first two years.

END OF SECTION - 08800

SECTION 09300 - TILE

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. Furnishing all labor, materials and equipment necessary for a complete installation of all floor and/or wall tile, coved and/or coveless bases, in sizes and shapes as shown on the drawings or specified herein.
B. Special installations of tile – countertops, shower receptors, etc.
C. Provide and set all thresholds associated with tile work or elsewhere as required.
D. Coordinate tile work with toiletroom accessories and other equipment.
E. Work of this section shall include modification of existing floor slopes in areas to receive floor tile as indicated on Drawings or required in the Field.
F. Coordinate with concrete work to ensure that new slabs to receive floor tile are not treated with curing or acceleration compounds, form-release agents or other additives that will interfere with tile bonding. Further, coordinate with concrete work for curing and drying to occur prior to tile installation.
G. Provide leveling beds to make new installations match old within 1/4” tolerances as allowed by ADA – wherever renovations occur.

1.02 RELATED WORK SPECIFIED ELSEWHERE:

A. Section 07900 - Joint Sealers: Mildew resistant sealant.
B. Refer to the Tile Council of America, Inc. (TCA) handbook, 2007 edition referenced herein. Coordinate with the latest edition of the TCA for all assemblies noted herein.

1.03 SUBMITTALS:

C. Submit manufacturer's descriptive literature and actual samples of material to Architect for review and color selection before materials are shipped to the site.
D. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.
E. Manufacturer's Installation Instructions: Submit manufacturer's installation instructions, including preparatory work and sequencing.
F. Submit Shop Drawings: Indicate tile layout, patterns, trough drain details, color arrangement, perimeter conditions, and junctions with dissimilar materials, control and expansion joints, thresholds, and setting details. Coordinate from the Architectural drawings and the final selection of material and size.
G. All floor tile shall meet achieve a minimum of 0.6 C.O.F. (coefficient of friction) as tested according to ASTM C1028. Notify the Architect during the Shop Drawing Review process for any material that does not meet this slip resistance.

1.04 PRODUCT HANDLING:

A. Deliver all products to jobsite in manufacturer's unopened cartons.
B. Store cartons in manner to keep cartons dry and undamaged.

1.05 ENVIRONMENTAL CONDITIONS:

A. Maintain minimum temperature at 50º F. during installation and for seven days thereafter.
B. Have proper lighting and ventilation during installation.
C. Do not install adhesives in an unventilated environment.
D. Vent temporary heaters to outside to avoid carbon dioxide damage to new tile work.

1.06 EXTRA STOCK:

A. An additional three (3) percent of each size and color of tile shall be delivered to Owner for future use.

1.07 REFERENCE STANDARDS:

A. ANSI A108.1 – General Requirements: Subsurfaces and Preparations by Other Trades.

B. ANSI 108.1A - Installation of Ceramic Tile with Portland cement Mortar.
C. ANSI A108.4 - Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile Setting Epoxy Adhesive.
D. ANSI A108.5 - Installation of Ceramic Tile with Dry Set Portland cement Mortar or Latex Portland Cement Mortar.
E. ANSI A108.6 - Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy.
F. ANSI A108.8 - Installation of Ceramic Tile with Chemical Resistant Furan Mortar and Grout.
G. ANSI A108.9 - Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout.
H. ANSI A108.10 - Installation of Grout in Tile work.
I. ANSI A118.1 - Dry Set Portland cement Mortar.
J. ANSI A118.3 - Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive.
K. ANSI A118.4 - Latex Portland cement Mortar.
L. ANSI A118.5 - Chemical Resistant Furan Mortars and Grouts for Tile Installation.
M. ANSI A118.6 – Standard Ceramic Tile Grouts.
N. ANSI A118.7 – Polymer Modified Tile Grouts for Tile Installations
O. ANSI A118.8 Modified Epoxy Emulsion Mortar/Grout.
P. ANSI A136.1 - Organic Adhesives for Installation of Ceramic Tile.
Q. ANSI A137.1 Standard Specifications for Ceramic Tile. For Floor installations.
R. Refer to: TCA (Tile Council of America) - Handbook for Ceramic Tile Installation, (2007 edition) as the standard for installation material and procedures.

1.08 QUALITY ASSURANCE:
A. Perform Work in accordance with ANSI A137.1.
B. Conform to TCA Handbook, wherever applicable.
C. Maintain one copy of each document on site.

1.09 QUALIFICATIONS:
A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.
B. Installer: Company specializing in performing the work of this section with minimum three years documented experience.

1.10 DELIVERY, STORAGE, AND HANDLING:
A. Deliver, store, protect and handle products to site under provisions of Section 01600.
B. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.
C. Deliver all products to job site in manufacturer’s unopened containers with grade seals unbroken and labels intact. Keep materials dry.

1.11 INCONSISTENCIES:
A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of any Specification, or between the Drawings and Specifications, the Contractor’s Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - PRODUCTS

PART 2A – WALL TILE

2A.01 CERAMIC WALL TILE:
A. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Dal-tile,
2. American Olean
3. Winburn
4. Summitville Tiles, Inc.
5. Or Architect approved substitution under provisions of Section 01600.

B. Ceramic Wall Tile shall conform to the following:
1. Type: Ceramic Mosaic porcelain tile.
2. Finish: Unglazed.
3. Size: 4' x 4"
4. Color: To be selected by Architect from full Keystone Group 2 range.

C. Provide bull-nosed tile at open termination points and other special shapes as required, for a complete installation. All accessory shapes shall match the field color and texture.
1. Immediately notify Architect if required trim pieces are not available to match proposed tile.

D. Provide coves, caps, inside and outside corners, and other trim units as required to construct details, etc., as indicated on the Drawings.

2A.02 LATEX-PORTLAND CEMENT MORTAR SETTING BED/BOND COAT MATERIALS:

A. For setting tile over solid backing in wet applications: **Utilize TCA-W202-07**, with new latex-portland cement mortar. Shall comply with ANSI A108.5. Prepare and install in strict accordance with TCA methodology. Provide new accessory materials above and beyond those listed above, as required for a completely compliant installation.

2A.04 GROUTING MATERIALS:

A. Grout - Typical: Polymer Modified grout:
1. Polymer Modified Unsanded Cement Grout resistant to shrinkage, meets or exceeds ANSI A118.7.
a. Prepare grout with grout manufacturer's recommended latex additive.
b. Grout color admixture shall be acid resistant, lightproof, non-fading mineral type.
c. Prepare grout with grout manufacturer's recommended latex additive.
d. Grout color admixture shall be acid resistant, lightproof, non-fading mineral type.

B. Acceptable Manufacturers:
1. Laticrete
2. Hydroment
3. TEC

And as recommended by manufacturer of primary tile materials. Subject to compliance with stated requirements. Must be compatible with approved tile.

C. Color: To be selected by Architect from all manufacturers noted above, full color range.

D. Grout Mix: Mix and proportion grout materials in strict accordance with manufacturer's instructions, ANSI Standard Specifications and TCA Handbook for Ceramic Tile Installation, unless more stringent requirements are specified within this section.

2A.05 ACCESSORIES:

A. Provide a sealant appropriate for wet environments such as Sikaflex-1A, or equal.
1. For tile work in shower areas, sealant type shall be appropriate for wet, high humidity conditions; resistant to mold and mildew.
2. Sealant color shall match grout color.

B. Metal edge trims as noted in the Documents.
1. Manufacturer of metal edge trim: Schlüter Systems, 800-472-4588.

PART 2B – FLOOR TILE

2B.01 CERAMIC FLOOR TILE:

A. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Dal-tile

2. American Olean
3. Winburn.
4. Summitville Tiles, Inc.
5. Or Architect approved substitution under provisions of Section 01600.

B. Ceramic Floor Tile of size, patterns and colors as indicated on Documents or noted herein; colors and size will vary according to details, manufacturer and applications - conforming to the following:
1. Type: Ceramic Mosaic porcelain tile
2. Finish: Unglazed.
3. Size: 6” x 6”
4. Color: To be selected by Architect from full Keystone Group 2 range.
5. Coefficient of Friction: 0.6 minimum, wet and dry.

C. Ceramic Base: Match floor tile for type, finish, and color. Use 4 courses of floor base (nom. 4”) for cove base unless otherwise noted. Use pre-molded outside corner cove base pieces.
1. Coordinate base installation with floor tile.

D. All floor tile shall meet achieve a minimum of 0.6 C.O.F. (coefficient of friction) as tested according to ASTM C1028. Notify the Architect during the Shop Drawing Review process for any material that does not meet this slip resistance.

E. **Provide coves, caps, inside and outside corners, and other trim units as required to construct details, etc., as indicated on the Drawings.**

2B.02 FLOOR TILE LEVELING BED MATERIALS:

A. Where required to create/level/meet slopes, or where Drawings indicate existing floor slopes are to be modified by installing leveling bed materials, the leveled areas shall be fully adhered to the existing floor and provide a smooth, permanently hard substrate suitable for installation of ceramic floor tile as specified.

B. For field prepared cement mortar leveling bed where thickness will exceed 3/4”:
1. Portland Cement: Shall conform to ASTM C 150 Type 1, gray.
2. Hydrated Lime: Shall conform to ASTM C 206 or C207 Type S.
3. Sand: Shall conform to ASTM C 144.
4. Latex Additive: Summitville S-800 Setting Acrylic Latex Additive, Hydroment #425 Multi-Purpose Acrylic Latex Mortar Additive, or Architect approved substitution.
5. Mix: Mix and proportion leveling bed in strict accordance with ANSI Standard Specifications and TCA Handbook for Ceramic Tile Installation, unless more stringent requirements are specified within this section.

C. If leveling bed will not exceed 3/4”, a pre-mixed “medium bed” mortar with a latex additive is required.
1. Acceptable Manufacturer: Hydroment Medium Bed Mortar and Hydroment #425 Multi-Purpose Acrylic Latex Mortar Additive by Bostik Tile and Flooring Group, 800-726-7845.
2. Or Architect approved substitution. Prepare in strict accordance with manufacturer’s instructions.

D. A waterproof membrane is required under all wet applications. Refer to TCA manual for complete installation assembly requirements and coordinate with setting bed applications.

2B.03 FLOOR TILE THIN SET SETTING BED/BOND COAT MATERIALS:

A. For setting floor tile in a **waterproof** installation, on slab-on-grade with no floor movement. Install a new waterproof membrane (liquid applied) with bond coat as required – refer to ANSI A118.10. Use Latex Modified Portland Cement Setting Mortar. Shall conform to or exceed ANSI A118.4. Use only a manufacturer's designated mortar for above grade slabs. Prepare and install in strict accordance with TCA methodology. Provide new accessory materials above and beyond those listed above, as required for a completely compliant installation. **Refer to TCA F122-07 for additional information and requirements.**

B. Accessories for above applications may be required:
   1. Cleavage Membranes shall be a component of a typical installation as noted below.
      a. Install Cleavage Membranes over cracks in existing concrete floor to receive new tile finishes.
      b. Install Cleavage Membranes over new concrete in tile applications over 30 feet in any direction.
      c. Where recommended by membrane manufacturer, prime floor surfaces with primer as recommended by membrane manufacturer.
      d. Acceptable Manufacturers:
         1) "ECB" (Elastomeric Crack Bridging) Anti-Fracture Membrane and #169 Primer by National Applied Construction Products, Inc., Canal Fulton, OH; 330-854-9622.
         2) LATICRETE Blue 92 Anti-Fracture Membrane, with accessories as required**.**
         3) Or Architect's approved substitution.
   2. Latex Modified Portland cement Setting/Bond Coat Mortar: Shall conform to ANSI A108.5. Shall be type as recommended by manufacturer of primary tile materials such as Commercial Building Products Versa-Bond Flex Latex Portland Cement, or Architect approved substitution. Prepare in strict accordance with manufacturer's instructions.
   3. Liquid applied waterproofing membrane: Shall conform to ANSI A118.10.
      a. Similar to - Laticrete 9235 Waterproofing Membrane.
      b. Or Architect's approved substitution.
      c. Provide 10 year minimum warranty for water penetration.
   4. Metal edge trims as required or noted in the Documents.
      a. Manufacturer of metal edge trim: Schlüter Systems, 800-472-4588
      b. See Documents for type or model required.
      c. or for material applications and installation requirements .

2B.04 FLOOR TILE GROUTING MATERIALS:

A. **See individual Specification paragraphs above for particulars on grout materials and installation procedures as required of specific installation systems**. In general:
   1. Polymer Modified Grout - Typical: Polymer Modified sand and/or un-sanded Portland cement floor grout; resistant to shrinkage, meeting or exceeding ANSI A118.7.
      a. Prepare floor grout with grout manufacturer's recommended latex additive.
      b. Sanded or Unsanded as required for application and as required by grout width.
      c. Grout color other than white/natural shall be assumed.
      d. Grout color admixture shall be acid resistant, lightproof, non-fading mineral type.
      e. Mix proportions of sand-to-cement as required for the joint widths (if required).

B. Acceptable Manufacturers:
   1. Laticrete
   2. Hydroment
   3. TEC
   4. Epoxy grout by:
      a. Custom Building Products
      b. 'SpectraLock' by Laticrete.
      c. or appropriate equal.
   5. As recommended by manufacturer of primary tile materials. Subject to compliance with stated requirements. Must be compatible with approved tile.

C Color: To be selected by Architect from manufacturer's full Group 1 range.

D. Grout Mix: Mix and proportion grout materials in strict accordance with manufacturer's instructions, ANSI Standard Specifications and TCA Handbook for Ceramic Tile Installation, unless more stringent requirements are specified within this section.

2B.06 FLOOR TILE ACCESSORIES:

A. Provide a sealant appropriate for Natatoriums or special wet environments such as Sikaflex-1A, or equal.
   1. For tile work in shower areas, sealant type shall be appropriate for wet, high humidity conditions and be mold and mildew resistant.
   2. Sealant color shall match grout color.

B. Edge Trim:
   1. Tile to Rubber Flooring intersection:
      a. Install single-flanged stainless steel/anodized aluminum edge trims at junctions between ceramic floor tile and other flooring material.
         1). Acceptable Manufacturers:
            a). Schlüter-SCHIENE-E by Schlüter Systems, 800-472-4588.
            b). or equal
         2). Select size according to floor tile thickness.
         3). Install in strict accordance with manufacturer's recommendations.

C. Membrane Accessory: No. 15 asphalt saturated felt or 4 mil thick polyethylene film. Coordinate with TCA manual for requirement in tile installation system.

D. **Cleavage Membrane: See above Specifications applicable to a particular installation system.**

E. Reinforcing Mesh: 2 x 2 inch size, weave of 16/16 wire size; welded fabric, galvanized.

F. Sealants for control/expansion joints: Sikaflex 1A, or equal, to resist chemical environment.

PART 3 - EXECUTION

3.01 PREPARATION:

A. Before tiling, surface shall be checked for variations in surface level, which shall not exceed the maximum variations listed below: Coordinate with below recommendations and the detailed installation procedures noted above.
   1. Floor tile shall be installed as per Tile Council of America's method F122-07 unless otherwise noted. Refer to Specifications above for particular procedures for special installations
   2. Wall tile shall be installed as per Tile Council of America's method W202-07 unless otherwise noted. Refer to Specifications above for particular procedures for special installations.

B. Power-wash and roughen all existing painted substrate surfaces scheduled to receive new tile finish prior to commencing with new tiling work.

C. Thoroughly prepare existing masonry substrate (float any hollows, bridge any high spots, etc.) to eliminate any and all existing masonry imperfections from telegraphing through to the new tile surface.

D. Report all unacceptable surfaces to the Architect, and do not tile surfaces until they are leveled. Beginning work constitutes acceptance of subfloor.
   1. Allow new concrete slabs to cure for no less than 28 days before installing tile.

E. **Determine locations of all expansions joints before starting work. See Section 3.02-G below for additional information**.

3.02 INSTALLATION:

A. Supply first class workmanship in all tile work. Install leveling bed (where required), cleavage/anti-fracture membrane and primer (where required), setting bed/bond coat, edge trim, tile, sealant joints and grout in accordance with each manufacturer's instructions and the TCA Handbook for Ceramic Tile Installation, latest edition.

1. Install cleavage/anti-fracture membrane and primer over all visible cracks in existing floor substrate and as required by installation conditions.
2. Install leveling bed materials as indicated on Drawings and where required to create a properly flat surface for thin set tile installation.

B. **Lay tile to pattern** indicated on Drawings, or, if not indicated in the Contract Documents to be provided, request tile pattern from Architect for complicated situations. The Tile Contractor shall develop tile layouts to eliminate, or at least minimize tile under a ½ piece. Coordinate with Architect if a specific layout plan is not detailed and the proposed layout does not balance in the space.

C. Do not interrupt tile pattern through openings.

D. **Place metal/resilient edge trim** at locations detailed on Drawings, Schedules and/or specified herein.

E. **Place tile joints uniform** in width and aligned over the full expanse of the tile installation. Joint width shall be uniform, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.

F. **Cut and fit tile neatly** around penetrations through tile and provide proper expansion joint around penetrations in accordance with TCA Handbook for Ceramic Tile Installation, latest edition.

G. **Movement Joints in Tile Work** –
   1. Locate expansion joints and other sealant filled joints (including control, contraction and isolation joints) where tile meets perimeter walls, at level changes and where indicated on Drawings. Note below for typical spacing.
   2. Locate expansion joints and other sealant-filled joints, including control, contraction, and isolations joints during installation. Tile joints should not be cut after setting.
      a. For all concrete joints running at an angle to the tile joinery, coordinate cleavage membrane and tile joints and propose detailed installation to Architect.
   3. If not indicated otherwise, install joints at spacings and locations recommended in TCA Handbook for Ceramic Tile Installation, and as approved by Architect.
      a. **Provide tile movement joints as noted in the Documents or as required by reference to TCA EJ171-07**.
      b. **Tile movement joints should be located over all cold joints and saw-cut control joints in substrate**. All subsequent or secondary tile movement joints shall follow:
         i. Provide movement joints every 20-25 ft. for interior installations, unless noted otherwise.
         ii. Provide movement joints every 10-12 ft. for exterior installations.
         iii. Provide movement joints every 10-12 ft. for interior installations subject to direct sunlight.
      c. Provide joint widths and as detailed for particular installations as referenced in TCA EJ171-07.

H. Provide sealants and back-up rods as required. Coordinate with Architect to match sealant color and texture with typical grout installation.

I. Prepare joints and apply sealants to comply with requirements of referenced standards and sealant manufacturer.

J. Keep any expansion and other sealant filled joints free of tile adhesive or grout.

K. Form corners neatly. Smooth all visible cut edges. Where pre-molded outside corner pieces are not available, use bullnosed edge tile to “ease” tiled corners.

L. Allow tile to set for a minimum of 48 hours prior to grouting or in accordance with manufacturer's instructions and the TCA Handbook for Ceramic Tile Installation.

M. Align all floor joints to result in straight uniform grout lines; adjust as required for an overall parallel appearance with surrounding walls. Align floor tile joints with base or wall tile joints where tile modules are the same.

3.03 GROUTING:

A. Grout manufacturer's directions and industry standards are to be followed as to grouting procedures and precautions.
B. Remove all grout haze, strictly observing grout and tile manufacturer’s recommendations as to use of chemical cleaners. Use of acid is not permitted.
C. Rinse tile work thoroughly with clean water before and after use of chemical cleaners. Follow grout manufacturer’s recommendations as to grouting procedures and precautions. Comply with ANSI/TCA A108.10 - Installation of Grout in Tile work and TCA Handbook for Ceramic Tile Installation.
D. On walls where applicable, grout shall be installed using joints wide enough to keep tiles on the 8" x 8" module of the wall.

3.04 PROTECTION:

A. Apply to all clean, completed tile floors a protective coat of neutral cleaner solution.
B. In addition, cover all the floors with heavy-duty, non-staining construction paper, taped in place.
C. Just before final acceptance of tilework, remove paper and rinse protective coat of neutral cleaner from all tile surfaces.
D. Prohibit all foot and wheel traffic from newly tiled floor for minimum three days, seven days preferable.
E. Place large, flat boards in walkways and wheelways for seven days where use of newly tiled floors with cement type grout is unavoidable.

END OF SECTION 09300

SECTION 09770 - RUBBER FLOORING

PART 1 – GENERAL

1.01 GENERAL CONDITIONS:

A. All Drawings and general provisions of Contract, including General Conditions, Supplementary Conditions, Division 0, and Division 1 Specification sections apply to the Work of this Section.

1.02 WORK INCLUDED:

A. Floor Preparation per Flooring Manufacturer's requirements
B. Prefabricated Rubber Flooring material, suitable for installation in Ice Arena Dressing and Toilet Rooms
C. Rubber Wall Base
D. Accessory Trims
E. Reducer Strips
F. Interior adhesive

1.03 DESCRIPTION OF WORK:

A. Furnishing all labor, materials and equipment necessary to provide and install Rubber flooring as shown on the Drawings and Schedules and specified herein.
B. Work of this section shall include all required floor preparation prior to installation of rubber flooring. Floor preparation includes modification of existing floor slopes in areas to receive rubber flooring as indicated on Drawings through installation of Portland Cement based leveling/fill bed.
B. Coordinate with installation of other floor finishes and related accessories (i.e. edge trim) at junction between rubber flooring and other floor finishes.
C. Coordinate with Division 15 regarding installation of new plumbing fixtures and adjustments to existing floor drains to remain and new floor drains.

1.04 RELATED WORK SPECIFIED ELSEWHERE:

A. Section 09300 - Tile.
B. Division 15 - Mechanical.

1.05 QUALITY ASSURANCE:

A. Manufacturer: Provide rubber flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants, and leveling compounds. Note: rubber wall base may be manufactured by a different manufacturer than the balance of materials.
B. Installer: Installer and crew shall have minimum five (5) years documented experience on installations comparable to the work specified herein.
    1. Installer shall provide all Rubber flooring manufacturer's recommended materials and accessories necessary to complete the installation.

1.06 REFERENCES:

A. ASTM D2047: Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as measured by the James Machine.
B. ASTM D2240: Standard Test Method for Rubber Property (Durometer Hardness).
C. ASTM D5116: Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products.
D. ASTM E648: Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
E. ASTM E662: Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.

F. ASTM E1745: Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
G. ASTM F970: Standard Test Method for Static Load Limit.
H. ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
I. ASTM G21: Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
J. ASTM F710: Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.

1.07 SUBMITTALS:
A. General: Submit per Section 01300 – Submittals.
B. Product Data: Submit manufacturer's technical data for athletic flooring, accessories, cleaning agents or detergents, primers, floor-patching fillers/levelers, etc. to demonstrate compliance with specified requirements.
C. Samples: Submit 3 sets of samples of each type, color and pattern of flooring and accessories required. Samples shall indicate full range of flooring color and pattern variation.
D. Maintenance Data: Submit manufacturer's maintenance and care instructions for flooring as part of close-out documents under provisions of Division 1.

1.08 WARRANTY:
A. Provide manufacturer’s full one (1) year warranty against defects in workmanship and materials.

1.09 PROJECT CONDITIONS:
A. Continuously heat areas to receive flooring to temperatures required by flooring manufacturer for at least 48 hours prior to installation. Maintain temperature as required by flooring manufacturer continuously during and after installation for a period as recommended by flooring manufacturer, but for not less than 48 hours. A minimum temperature as recommended by flooring manufacturer shall be maintained thereafter.
B. Protect all materials from direct flow of heat from hot-air registers, radiators or other heating fixtures and appliances.

1.10 INCONSISTENCIES:
A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of any Specification, or between the Drawings and Specifications, the Contractor’s Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - PRODUCTS

2.01 MANUFACTURERS:
A. Proprietary names and/or model numbers used to designate products or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other accepted manufacturers. Pre-bid requests for approval of other products may be accepted in accordance with Section 00100 – Instructions to Bidders. Post-Bid substitutions may be accepted in accordance with Section 01600 – Product Substitutions.
B. Acceptable Manufacturers: Subject to compliance with requirements, provide rubber flooring by one of the following:
1. Basis of Specification: 10mm Mondo, ‘Sport Impact’.

2.02 FLOORING MATERIALS:
A. Prefabricated Rubber Flooring: calendered and vulcanized with a base of natural and synthetic rubbers, stabilizing agents and pigmentation. Manufactured in two layers which are vulcanized together.

1. Size: 6'-0" wide rolled goods.
2. Thickness: 0.394" (10mm) minimum thickness.
3. Hardness Shore 'A' (ASTM D-2240): 80/77
4. Static Coefficient (ASTM D-2047): 1.20 dry, 0.67 wet
5. Critical Radiant Flux (ASTM E-648): 0.58 watts/cm2, type 1.
6. Fungal Resistance Test (ASTM G 21-90): No growth
7. Optical Density of Smoke (ASTM E-662): <450, class 1
8. Static Load Limit (ASTM F-970): 0.003 in.
9. V.O.C. Compliant (ASTM D-5116): Yes
10. Finish: Sealskin.
10. Color: To be selected by architect from Manufacturer's full range.

B. Concrete Slab Primer: Where required, use non-staining type only as recommended by flooring manufacturer.

C. Patching/Leveling Compounds: Where required, use type provided by or approved by flooring manufacturer for applications encountered.

D. Sloped Floor Transitions: Where required, noted, or shown, use types of materials provided by or approved by flooring manufacturer for applications encountered. Note: even, uniform transitions from 0" to less than 1" are anticipated.

E. Adhesives/Cements: Use epoxy adhesive products certified by the flooring manufacturer, EP 55, for all athletic flooring.

F. Reducer Trim Strip: Solid, one-piece reducer strip; butt-end gauge to match thickness of flooring. Provide wherever edge of flooring is exposed.

2.03 RUBBER WALL BASE:

A. Rubber Wall Base: Products complying with Federal Specification F-1861 for type TS Thermoset vulcanized rubber. Provide matching end stops and preformed or molded corner units.
   1. Height: 4" and 6", see Finish Schedule for locations.
   2. Thickness: 1/8" gauge
   3. Style: Rubber wall base shall be 'cove' base.
   4. Accessories: Provide matching molded rubber corners.

B. Manufacturer: Roppe, or architect approved equal.

C. Color: Black.

PART 3 - EXECUTION

3.01 PREPARATION:

A. Installer shall inspect subfloor surfaces to determine that they are satisfactory. A satisfactory subfloor is one that is dry, sufficiently cured, smooth and free from cracks, holes, ridges, coatings preventing adhesive bond, and other defects impairing full adhesion, performance or appearance AND which meets or exceeds the flooring Manufacturer's published substrate criteria.
   1. Do not allow resilient flooring work to proceed until subfloor surfaces are satisfactory.
   2. For flooring installations, maximum surface variation shall not exceed 1/8" in 10'-0".

B. Moisture and alkalinity tests must be preformed. Moisture content must not exceed the capacity of the specified adhesive (verify using the anhydrous calcium chloride test as per ASTM F1869) and pH level should be in the range of 7 to 8.5.

C. Perform bond and moisture tests on all new concrete subfloors scheduled to receive new athletic flooring to determine if surfaces are sufficiently cured and dry as well as to ascertain the presence of curing compounds. Comply with flooring manufacturer requirements for concrete floor curing times.

D. Remove coatings from subfloor surfaces that would prevent adhesive bond, including old floor finishes, paints, oils, waxes; grease, sealers and curing compounds and other materials incompatible with floor adhesives. Broom clean or vacuum surfaces clean of dust and dirt. Comply with rubber flooring manufacturer's recommendations for suitable cleaning solutions

or detergents. Where cleaning agents or detergents are used, surfaces shall be rinsed completely and sufficient time shall be allowed for complete drying.

E. If subfloors are considered to be unusually smooth, etch surface with commercial grade muriatic acid solution in accordance with flooring manufacturer's recommendations. Acid shall be removed after effervescence ceases and surface thoroughly rinsed with clear water and allowed to dry completely.

F. Use floor fill compound as recommended by flooring manufacturer for filling small cracks and depressions in subfloors to provide a smooth, flat and permanently hard surface. Calcium sulfate, plaster or gypsum patching/leveling compounds are not acceptable. Filled areas shall be fully cured and dry before installation of flooring.

1. If floor fill is found not to be bonding tightly to the subfloor or if flooring is found not to be bonding tightly to the floor fill during the guarantee period, the Contractor shall remove such loose floor fill or flooring or both and prepare the surfaces in whatever way necessary and reinstall floor fill or flooring or both, guaranteeing such patched areas for time period equal to original guarantee period. This work shall be done at no additional cost to the Owner.

G. Concrete control and construction joints shall be properly filled and cured prior to flooring installation in accordance with flooring manufacturer's recommendations.

H. Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

I. Sequence flooring installation with other work so as to minimize possibility of damage and soiling of flooring during remainder of construction period.

J. Prepare subfloor in accordance with Manufacturer's current printed Subfloor Preparation guidelines.

K. Beginning of installation means acceptance of existing substrate and site conditions.

3.02 INSTALLATION:

A. Install rubber athletic flooring in accordance with Manufacturer's current printed Installation Manual

3.03 CLEANING AND PROTECTION:

A. Initial cleaning should only be performed 72 hours after the rubber athletic surface has been completely installed.

B. Provide final cleaning of flooring in strict adherence with flooring manufacturer's instructions. Follow manufacturer's recommendations regarding scheduling of final cleanings in relation to substantial completion dates. Note: no initial finish is desired.

END OF SECTION 09770

SECTION 09900 - PAINTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:
- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to the work of this section.

1.02 WORK INCLUDED:
- A. General: The terms "paint" or "painting" as used in the Drawings and this Section are general terms which shall, by definition, include surface preparations required of finishes, and the application of fillers, finishes, sealers, primers, stains, paints, and/or varnishes.
- B. Preparation of all surfaces and materials to receive finish.
- C. Painting and/or finishing of all surfaces indicated on the Drawings, and all interior and exterior exposed and/or unfinished items and surfaces throughout the project.
- D. Painting of all unfinished (i.e. no factory final finish) interior and exterior metal, including:
  1. All mechanical panels, access panels, cover plates, louvers, grilles, and metal expansion plates not factory-finished.
  2. All exposed piping and ductwork, hangers and supports, and electrical conduit and fixture supports that occur in rooms or areas where walls and/or ceilings are scheduled to be painted.
  3. All exposed piping and ductwork, hangers and supports, and electrical conduit and fixture supports that occur in rooms with exposed structure ceilings scheduled to be painted.
  4. All exposed portions of all shop-primed steel embedded in masonry or other construction.
- E. Intumescent protective coatings.
  1. Protecting flammable surfaces with an intumescent coating to achieve a Class 'A' rating.

1.03 RELATED WORK SPECIFIED ELSEWHERE:
- A. Painting of recessed electrical cabinets and panels.
- B. Painting of all utility, HVAC, and electrical equipment and piping exposed on interior and exterior.
- C. Shop priming, except shop priming of "AESS" steel components.
- D. Pre-finished items.
- E. Concealed surfaces.
- F. Identification of mechanical piping and electrical conduits:
  1. This identification consists of an adhesive tape system and is in addition to painting of piping and conduits under the section, as specified above.
- G. Installation of finish hardware.

1.04 COLOR SCHEDULES AND SAMPLES:
- A. See Color Coordination, below.
- B. After the beginning of construction (see 'Color Coordination' paragraph, below), the architect will prepare a color schedule for color and finish requirements for each painted or finished surface for this project. The schedule may include color chips for matching.
- C. Notify the Architect prior to mobilizing for painting so samples of colors and/or finishes may be requested.
- D. When requested by the architect, before paint materials are delivered to the jobsite, furnish 12" x 12" samples of colors and/or finishes applied on materials similar to those to which paint will be applied on the project.
  1. Before beginning work, the painting contractor shall apply a sample area of each of the types of finish on each type of surface for the architect's review. Sample area shall be approximately 6' x 6', with each successive coat covering an area 12" smaller than the coat before it, allowing the architect to inspect a minimum 12" strip of successive coats.
  2. Additional Field Samples: Place up to four samples, 48 inches square, located on the jobsite on actual substrates, with adjacent finishes, illustrating actual installation of selected test colors and textures selected for Architect/Owner review and approval.

E. The Architect has the option of accenting certain building elements different colors. This information will be included in the final Color Schedule.
F. The Architect reserves the right to select colors from Manufacturer's standard or premium price groups, including deep tone colors for both interior and exterior products.
G. Furnish an equal product by the same Manufacturer only in those instances where a deep tone color specified by the Architect is not available in the specified product. This is subject to the Architect's approval.
H. Tinted primer shall be used whenever deep tone colors are specified.

1.05 ATTIC STOCK:
A. Leave on premises, one unopened gallon of each color of each type of paint or finish used.
B. Containers to be unopened after preparation at the factory, tightly sealed, bearing manufacturer's name, type of paint, brand name, color designation, and instructions for mixing and/or reducing.

1.06 DELIVERY, STORAGE AND HANDLING:
A. Deliver paint materials in sealed original labeled containers, bearing manufacturer's name, type of paint, brand name, color designation and instructions for mixing and/or reducing.
B. Provide adequate storage facilities. Store paint materials at minimum ambient temperature of 45 degrees F. in a well-ventilated area.
C. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.07 SUBMITTALS:
A. Within thirty (30) days after an award of bid, the painting contractor shall submit a statement to the architect indicating both the manufacturer of paint of finish products to be used on the job, and the specific brand name for each usage specified.
B. The architect reserves the right to request and receive copies of invoices for material purchased for this project from the various manufacturers and/or dealers.
C. The painting contractor shall provide the architect with (2) complete and current color decks from the select manufacturer to select colors from. One color deck will be retained by the Architect.

1.09 MANUFACTURER CERTIFICATION:
A. Manufacturer shall certify that tests have been performed on semi-gloss wall finish and others selected by Architect. Testing shall include the following (or equivalent) tests:
   1. Scrub resistance ASTM D2486-79: Value as specified in approved schedule, but not less than 1,200.
   2. Washability ASTM D3450-80: Value as specified in approved schedule but not less than 80% for sponge and 90% for brush.

1.10 MIXING, THINNING, AND STORAGE:
A. Store and mix paints only in areas designated and provided with proper proptection fro floors and walls.
B. Mix and thin paints in strict accordance with Manufacturer's recommendations.
C. Deliver and store paints and related flammable materials in the Manufacturer's original unopened containers, as far as practicable. Keep partially used materials in tightly closed containers.
D. Do not store oil or paint soaked rags inside the building. Do not store materials in any room containing a direct fired heating unit.

1.11 ENVIRONMENTAL CONDITIONS:
A. A minimum interior temperature of 65 degree F shall be maintained during the actual application and drying of the paint, and until occupancy of the building occurs. Adequate ventilation shall be maintained at all times to control excessive humidity that will adversely affect the curing of coatings. The general contractor is solely responsible for maintaining suitable temperatures and ventilation.

B. No exterior painting shall be undertaken if air or surface temperatures are below 50 degree F, or if the temperature is expected to drop below that mark before the coating has dried. do not paint during or immediately after foggy, rainy, or frosty weather, or until frost, dew or condensation has evaporated. Ambient air temperature and surface temperature must be minimum 5 degree F above dew point.
C. Surfaces shall be dry before any coating is applied. New plaster, masonry and concrete work shall not be primed until it has been determined these substrates have dried sufficiently and are of suitable Ph to safely accept paint. A reliable electronic moisture meter shall be used to make the determination pertaining to moisture.
D. Adequate lighting shall be provided in work areas to assure adequate illumination. See Division 1, for temporary electric requirements.
E. Do not commence work in spaces until all other trades other than finish work trades have completed their work within the space.

1.12 PROTECTION:
A. Close off the various spaces while painting and exclude dust until finish is dry.
B. Adequately protect adjacent surfaces from paint and damage. Repair damage as a result of inadequate or unsuitable protection.
C. Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or droppings from fouling surfaces not being painted and in particular, surfaces within storage and preparation area.
D. Place cotton waste, cloths and materials that may constitute a fire hazard in closed metal containers and remove daily from site.
E. Remove electrical plates, surface hardware, fittings and fastenings, prior to painting operations. These items are to be carefully stored, cleaned and replaced on completion of work in each area. When cleaning hardware, do not use solvent that may remove permanent lacquer finish.

1.13 INTUMESCENT COATINGS:
A. Intumescent coating shall meet ASTM E-84 (NFPA 255) Class ‘A’ rating; also up to 30 minutes per NFPA 703 & BOCA 1702-4.1.
B. Prepare all surfaces to be coated with intumescent coatings as prescribed in product literature to maintain the required Class ‘A’ rating.
C. The product shall be latex, intumescent fire retardant paint manufactured in accordance with Federal Specification TT-P-001932.
D. Apply in coverage rates as specified to maintain Class ‘A’ rating.
E. Suggested coverage may vary but shall be assumed at 190 to 200 Sq. Ft./US gallon.
F. Consult with manufacturer and substrate for any required primers.

1.14 QUALITY ASSURANCE:
A. General: Work shall be performed by tradesmen with at least (5) five years experience with similar types of preparation and application as required by this Project.
B. Refinishing and/or refurbishing woodwork: Work shall be performed by tradesmen with at least (5) five years experience, and who are capable of evaluating wood surfaces, stripping, fine sanding, and refinishing hardwood and softwood surfaces.

1.15 INCONSISTENCIES:
A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of this Specification, or between the Drawings and Specifications, the Contractor’s Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

A. All paint materials shall be products of:
   1. Pittsburgh Paint Company
   2. Benjamin Moore
   3. Sherwin-Williams
   4. Pratt & Lambert
   5. ICI Dulux
   6. Tnemec Co. Inc.
   7. Surface Protection Industries Inc. (SPII) - Zolatone (Multi-Speck Finish)
   8. Aqua-Fleck (Multi-Speck Finish)
   9. Coronado Paint Co. (Multi-Speck Finish)
   10. PPG Industries, Inc.
   11. Flame Control Coatings, Inc. (Intumescent coatings).
   12. Substitutions shall not be made without the architect's prior approval.

B. All materials used on the job shall be the manufacturer's highest quality product for each usage specified.

2.02 MATERIALS:

A. Furnish specified Manufacturer's top quality, first line material, delivered to the job-site in original, unopened, labeled containers.

B. Acceptance of materials is conditional upon demonstration of washability and abrasion resistance of specified test patch.

C. Tinted primer shall be used whenever deep tone colors are specified.

2.03 PRODUCTS:

A. Following are specifications for products for specific applications. Should one or more of the specified manufacturers no longer produce the specified product (due to a change in product line, for example), the Painting Contractor may use another product from the same manufacturer(s) provided the manufacturer warrants that it is substantively similar to the specified product and intended for the specified application.

B. Exterior Finishes:

1. Ferrous Metals (doors, railings, non-galvanized lintels, fences, gates, etc.):
   a. First Coat: (if flash rusting occurs, use two coats)
      i. Benjamin Moore MO4 Acrylic Metal Primer
      ii. PPG Industries 90-708 Series, Pitt-Tech One-Pack Interior/Exterior Industrial Primer.
      iii. Pratt & Lambert Latex Suprime 3
      iv. Sherwin-Williams DTM Acrylic Primer Finish B66W1
   b. Second and Third Coats:
      i. Benjamin Moore Moorcraft Latex House and Trim Paint 170 except railings. which shall be Impervex Enamel 309
      ii. PPG Industries 6-2000 Series, Speedhide Exterior Satin Latex except railings, which shall receive 90-474 Series, Pitt-Tech One-Pack Interior/Exterior Satin High Performance Industrial Enamel
      iii. Pratt & Lambert Pro Hide + Satin Latex H.P.
      iv. Sherwin-Williams DTM Acrylic Gloss Coating (Water Reducible), B66 Series
2. Exterior "AESS" Steel (galvanized or ungalvanized):
   a. Prime Coat: Spray-Applied Steel Guardrail Component Primer:
      i. "Coraflon ADS Epoxy Primer" ADS552 Series.
         01. Dry film per coat: 2.0 to 3.0 mils
         02. Wet film per coat: 2.8 to 4.2 mils, thinned)
         03. Minimum Coats: 2
         04. Minimum total dry film: 4.0 mils

ii. Other two-component rust-inhibitive epoxy Primer products compatible with other Manufacturer's topcoats which are suitable for exterior applications may be substituted for use under an Architect-approved topcoat substitution.

b. Intermediate and Top Coats: Electrostatic Spray-Applied Steel Guardrail Component Topcoat for new and existing steel, equal to:
   i. "Coraflon ADS" Series.
      01. Color: Selected from Manufacturer's Metallic Finishes.
      02. Gloss: Selected from Manufacturer's full range, including at least 80%, 50%, and 30% gloss levels.
      03. Dry film per coat: 1.5 to 2.0 mils
      04. Wet film per coat: 4.6 to 6.3 mils, thinned)
      05. Minimum Coats: 2
      06. Minimum total dry film: 3.5 mils
   ii. With Architect's prior approval, other two-component 100% fluoropolymer resin topcoat products which are suitable for exterior applications and are available in similar metallic colors and gloss levels may be substituted.

3. Asphalt Pavement Markings:
   a. Refer to Division 2.

C. Interior Finishes:

1. Plaster and Gypsum Board Ceilings and Ceiling Drops EXCEPT where 'SPECIAL' is specified:
   a. First Coat:
      i. Benjamin Moore Moorcraft Vinyl Latex Primer-Sealer 273
      ii. Pittsburgh Paints 6-603 Speedhide Acrylic Alkali Resistant Primer for plaster; 6-2 Speedhide Latex Primer-Sealer fro gypsum board
      iii. Pratt & Lambert Pro-Hide + PVA Wall Primer Z-96
      iv. Sherwin-Williams Wall and Wood Primer B49W22 for plaster; Pro Mar Latex Wall Primer B28W200 for gypsum board
   b. Second Coat (tinted to approximately final color):
      i. Benjamin Moore Moorcraft Vinyl Latex Flat 275
      ii. Pittsburgh Paints Speedhide Latex Flat 6-70 (for deep tone colors use Wall Hide 80-587)
      iii. Pratt & Lambert Pro Hide + PVA Wall Primer Z-96
      iv. Sherwin-Williams Pro-Mar 200 Latex Flat Wall Paint, B30W200
   c. Third Coat:
      i. Benjamin Moore Moorcraft Vinyl Latex Flat 275
      ii. Pittsburgh Paints Speedhide Latex Flat 6-70 (for deep tone colors use Wall Hide 80-587)
      iii. Pratt & Lambert Pro Hide + Latex Flat
      iv. Sherwin-Williams Pro-Mar 200 Latex Flat Wall Paint, B30W200
2. Plaster and Gypsum Board Walls and Columns EXCEPT where 'SPECIAL' is specified:
   a. First Coat:
      i. Benjamin Moore Moorcraft Vinyl Latex Primer-Sealer 273
      ii. Pittsburgh Paints 6-603 Speedhide Acrylic Alkali Resistant Primer for plaster; 6-2 Speedhide Latex Primer-Sealer for gypsum board
      iii. Pratt & Lambert Pro-Hide + PVA Wall Primer Z-96
      iv. Sherwin-Williams Wall and Wood Primer B49W22 for plaster; Pro Mar Latex Wall Primer B28W200 for gypsum board
   b. Second and Third Coats:
      i. Benjamin Moore Moorcraft Latex Eggshell Enamel 274
      ii. Pittsburgh Paints Speedhide Latex Eggshell 6-411 (for deep tone colors use Manor Hall Interior Eggshell 89-587)
      iii. Pratt & Lambert Pro Hide + Latex Eggshell Enamel
      iv. Sherwin-Williams Pro-Mar 200 Latex Eg-Shell Enamel, B20W200
3. New Ground Face Masonry Block:
   a. First Coat :

i. One coat factory-applied sealer.
b. Second and Third Coats:
i. Two coats field-applied clear sealer, compatible with factory-applied sealer. Reference: Sure Klean Burnished Block Sealer – by ProSoCo.

4. New Painted Masonry Block:
a. Filler Coat (Masonry block filler at rate not to exceed 100 sq. ft. per gallon):
i. Benjamin Moore Interior and Exterior Block Filler 173
ii. Pittsburgh Paints Speedhide Latex Block Filler 6-7
iii. Pratt & Lambert Pro-Hide + Latex Block Filler
iv. Sherwin-Williams Pro Mar Interior/Exterior Block Filler B25W25
b. Second and Third Coats (Total dry film thickness shall be not less than 3.5 mils, excluding Filler Coat):
i. Benjamin Moore Moorcraft Latex Semi Gloss Enamel 276
ii. Pittsburgh Paints 6-512 Series Speedhide Semi Glass Latex Enamel
iii. Pratt & Lambert Pro-Hide + Latex Satin Enamel
iv. Sherwin-Williams Pro Mar 200 Latex Semi Gloss Enamel B31W200 Series
5. Existing Painted Masonry Block:
a. First and Second Coats (Total dry film thickness shall be not less than 3.5 mils, excluding Filler Coat):
i. Benjamin Moore Moorcraft Latex Semi Gloss Enamel 276
ii. Pittsburgh Paints 6-512 Series Speedhide Semi Glass Latex Enamel
iii. Pratt & Lambert Pro-Hide + Latex Satin Enamel
iv. Sherwin-Williams Pro Mar 200 Latex Semi Gloss Enamel B31W200 Series
6. Poured Concrete Walls and Ceilings (clean all concrete with 5% solution of muriatic acid, rinse thoroughly, and allow to dry):
a. First Coat:
i. Benjamin Moore Moorcraft Vinyl Latex Primer-Sealer 273
ii. Pittsburgh Paints 6-603 Speedhide Acrylic Alkali Resistant Primer
iii. Pratt & Lambert Pro-Hide + Latex Flat Wall Paint
iv. Sherwin-Williams Pro Mar 200 Latex Flat Wall Paint, B28W200
b. Second and Third Coats:
i. Benjamin Moore Moorcraft Vinyl Latex Flat 275
ii. Pittsburgh Paints 6-70 Speedhide Flat Latex (for deep tone colors use Wall Hide 80-587)
iii. Pratt & Lambert Pro-Hide + Latex Flat Wall Paint
iv. Sherwin-Williams Pro Mar 200 Latex Flat Wall Paint, B30W200
7. Exposed Ceiling Construction:
a. First Coat (spot prime any welds, etc.):
i. Benjamin Moore MO4 Acrylic Metal Primer
ii. Pittsburgh Paints 90-708 Series Pitt-Tech One-Pack Interior/Exterior Industrial Primer
iii. Pratt & Lambert Tech-Gard Acrylic Metal Primer, Z190
iv. Sherwin-Williams DTM Acrylic Primer/Finish, B66W1
b. Second and Third Coats (if deep tone colors are specified, the products below shall be factory mixed):
i. Benjamin Moore Moorcraft Dry Fog Sweep Up 272
ii. Pittsburgh Paints 6-715 Speedhide Flat Latex Dry Fog
iii. Pratt & Lambert Pro-Hide + Latex Dryfall Z9970, Flat
iv. Sherwin-Williams Waterborne Acrylic Dryfall, B42W1, Flat
8. Interior “AESS” Steel (exposed to view):
a. Prime Coat: Spray-Applied Steel Guardrail Component Primer:
i. “Coraflon ADS Epoxy Primer” ADS552 Series.
01. Dry film per coat: 2.0 to 3.0 mils
02. Wet film per coat: 2.8 to 4.2 mils, thinned)
03. Minimum Coats: 2
04. Minimum total dry film: 4.0 mils

ii. Other two-component rust-inhibitive epoxy Primer products compatible with other Manufacturer's topcoats which are suitable for exterior applications may be substituted for use under an Architect-approved topcoat substitution.

b. Intermediate and Top Coats: Electrostatic Spray-Applied Steel Guardrail Component Topcoat for new and existing steel, equal to:
   i. "Coraflon ADS" Series.
      01. Color: Selected from Manufacturer's Metallic Finishes.
      02. Gloss: Selected from Manufacturer's full range, including at least 80%, 50%, and 30% gloss levels.
      03. Dry film per coat: 1.5 to 2.0 mils
      04. Wet film per coat: 4.6 to 6.3 mils, thinned)
      05. Minimum Coats: 2
      06. Minimum total dry film: 3.5 mils
   ii. With Architect's prior approval, other two-component 100% fluoropolymer resin topcoat products which are suitable for exterior applications and are available in similar metallic colors and gloss levels may be substituted.

9. Ferrous, Galvanized Metals, and Aluminum:
   a. Prepare ferrous and galvanized metals as herein before specified. See Division 5 for requirements of priming of ferrous metals. Do all touch up and priming on unprimed metals in accordance with requirements of Division 5.
   b. Apply paint in accordance with Steel Structure Painting Council Paint Application Specifications SSPC-PA1 to a dry film thickness as specified by the manufacturer.
   c. First Coat (primer) at ferrous metals (to be used even at shop primed items except as noted in Division 5):
      i. Benjamin Moore MO4 Acrylic Metal Primer
      ii. Pittsburgh Paints 90-708 Series Pitt-Tech One-Pack Interior/Exterior Industrial Primer
      iii. Pratt & Lambert Latex Suprime 3
      iv. Sherwin-Williams DTM Acrylic Primer/Finish, B66W1
   d. First Coat (primer) at galvanized metals (after thorough cleaning with minerals spirits, changing rags frequently – SSPC-SP1 with VM&P Naptha)
      i. Benjamin Moore MO4 Acrylic Metal Primer
      ii. Pittsburgh Paints 90-708 Series Pitt-Tech One-Pack Interior/Exterior Industrial Primer
      iii. Pratt & Lambert Latex Suprime 3
      iv. Sherwin-Williams DTM Acrylic Primer/Finish, B66W1
   e. First Coat (primer) at aluminum:
      i. Benjamin Moore MO4 Acrylic Metal Primer
      ii. Pittsburgh Paints 90-708 Series Pitt-Tech One-Pack Interior/Exterior Industrial Primer
      iii. Pratt & Lambert Latex Suprime 3
      iv. Sherwin-Williams DTM Acrylic Primer/Finish, B66W1
   f. Second and Third Coats (Ferrous, Galvanized Metals, and Aluminum):
      i. Benjamin Moore Moorcraft Latex Semi Gloss Enamel 276
      ii. Pittsburgh Paints 6-512 Speedhide Semi Gloss Latex Enamel
      iii. Pratt & Lambert Pro-Hide + Latex Satin Enamel
      iv. Sherwin-Williams Metalatex Semi Gloss Enamel B-42 Series

10. Painted Woodwork:
   a. Coordinate with Division 6 to verify scope of work to be finished by Millwork Contractor.
   b. First Coat:
      i. Benjamin Moore Moorcraft Alkyd Enamel Underbody 269
      ii. Pittsburgh Paints 6-6 Speedhide Alkyd Enamel Undercoater
      iii. Pratt & Lambert Alkyd Suprime 11
      iv. Sherwin-Williams Wood and Wall Primer, B49W2
   c. Second and Third Coats:
      i. Benjamin Moore Dulamel Alkyd Eggshell Enamel 305

ii. Pittsburgh Paints 6-90 Series Speedhide Lo-Sheen Alkyd Enamel (for deep tone colors use 20-554)
iii. Pratt & Lambert Pro-Hide + Alkyd Eggshell Enamel
iv. Sherwin-Williams Pro Mar 200 Alkyd Eg-Shell Enamel

11. Natural Finish Woodwork (not previously finished):
    a. Coordinate with Division 6 to verify scope of work to be finished by Millwork Contractor.
    b. First Step (Wood Filler, applied as per manufacturer's instructions):
        i. Benjamin Moore Benwood Paste Wood Filler 238
        ii. Pratt & Lambert Filler-Sealer
    c. Second Step (Sanding Sealer, if recommended by the manufacturer).
    e. Third and Fourth Steps (two finish coats)
        i. Benjamin Moore Interior Stays Clear 423/Low Lustre
        ii. Pittsburgh Paints Acrylic Latex Varnish Satin
        iii. Pratt & Lambert 77-49 Rez interior Satin Acrylic Polyurethane
12. Plaster, Gypsum Board, Acoustical Wall and Ceiling Panels, and other substrates specified to receive "SPECIAL' finish:
    a. Surface Protection Industries Inc. (SPII): Zolatone "Traditional Formula". **Material Allowance: Allow for $105/gal for 'SPECIAL' finishes.**
    b. Provide the following application:
        i. One Coat Primer, sealer as required by individual manufacturer
        ii. Intermediate Coat(s): Applications with layering as required by manufacturer and chosen paint color/effect.
        iii. One Clear Overcoat: As required by manufacturer.
13. Intumescent Coating:
    a. Flame Control Coatings, Inc.: Flame Control No. 20-20.
    b. Others may be substituted if meeting ASTM E-84 (NFPA 255) Class 'A' rating.

D. Mechanical (unless otherwise specified in Division 15):

1. Apparatus, Equipment, and Equipment Supports:
    a. First Coat:
        i. Benjamin Moore MO4 Acrylic Metal Primer
        ii. Pittsburgh Paints 90-708 Series Pitt-Tech One-Pack Interior/Exterior Industrial Primer
        iii. Pratt & Lambert Latex Suprime 3
        iv. Sherwin-Williams DTM Acrylic Primer/Finish, B66W1
    b. Second Coat:
        i. Benjamin Moore Moorcraft Latex Semi Gloss Enamel 276
        ii. Pittsburgh Paints 90-474 Series Pitt-Tech One-Pack Interior/Exterior Satin High Performance Industrial Enamel
        iii. Pratt & Lambert Pro-Hide + Latex Satin Enamel
        iv. Sherwin-Williams Metalatex Semi Gloss Enamel B-42 Series
2. Exposed Bare Piping, Valves, Fittings, and Hangers:
    a. First Coat:
        i. Benjamin Moore MO4 Acrylic Metal Primer
        ii. Pittsburgh Paints 90-708 Series Pitt-Tech One-Pack Interior/Exterior Industrial Primer
        iii. Pratt & Lambert Latex Suprime 3
        iv. Sherwin-Williams DTM Acrylic Primer/Finish, B66W1 at all metals except copper. At copper, use Ken Kromik Metal Primer, B50 Series
    b. Second Coat:
        i. Benjamin Moore Moorcraft Latex Semi Gloss Enamel 276
        ii. Pittsburgh Paints 90-474 Series Pitt-Tech One-Pack Interior/Exterior Satin High Performance Industrial Enamel
        iii. Pratt & Lambert Pro-Hide + Latex Satin Enamel
        iv. Sherwin-Williams Metalatex Semi Gloss Enamel B-42 Series
3. Exposed Insulation Piping, Valves, Fittings, and Hangers when canvas wrapped:

a. First Coat:
   i. Benjamin Moore Moorcraft Vinyl Latex Primer/Sealer 273
   ii. Pittsburgh Paints 6-2 Speedhide Latex Primer-Sealer
   iii. Pratt & Lambert Pro Hide + PVA Wall Primer Z-96
   iv. Sherwin-Williams Pro Mar 200 Latex Wall Primer, B28W200
b. Second Coat:
   i. Benjamin Moore Moorcraft Vinyl Latex Flat 275
   ii. Pittsburgh Paints Speedhide Latex Interior Flat 6-70 (for deep tone colors use Wall Hide 80-587)
   iii. Pratt & Lambert Pro-Hide + Latex Flat Wall Paint
   iv. Sherwin-Williams Pro Mar 200 Latex Flat Wall Paint, B30W200

4. Insulated Ductwork and Piping with Canvas Covering Inc. Hangers for any kind of ductwork:
   a. One Brush Coat:
      i. Pittsburgh Paints 42-7 Speedhide Interior Fire Retardant Flat Latex
5. Grilles, Registers, and Diffusers:
   a. First Coat:
      i. Benjamin Moore MO4 Acrylic Metal Primer
      ii. Pittsburgh Paints 90-708 Series Pitt-Tech One-Pack Interior/Exterior Industrial Primer
      iii. Pratt & Lambert Latex Suprime 3
      iv. Sherwin-Williams DTM Acrylic Primer/Finish, B66W1
   b. Second and Third Coats:
      i. Benjamin Moore Moorcraft Latex Semi Gloss Enamel 276
      ii. Pittsburgh Paints 90-474 Series Pitt-Tech One-Pack Interior/Exterior Satin High Performance Industrial Enamel
      iii. Pratt & Lambert Pro-Hide + Latex Satin Enamel
      iv. Sherwin-Williams Metalatex Semi Gloss Enamel B-42 Series
6. Exterior Ductwork Exposed to Weather:
   a. First Coat (Heavy Coat):
      i. Glidden 61778 Glid-Guard Top Service Thick Black
      ii. Pittsburgh Paints 95-240 Series Pitt-Guard Rapid Coat D-T-R
      iii. Koppers Bitumastic-Super Service Black
   b. Second and Third Coats (applied minimum 24 hrs after first coat):
      i. Glidden 61780 Coat Tar Emulsion
      ii. Pittsburgh Paints 95-240 Series Pitt-Guard Rapid Coat D-T-R
      iii. Koppers Bituglas Aluminum

E. Electrical (unless otherwise specified in Division 16):

1. Exterior Exposed Electrical Conduit, Fittings, Boxes, and Other Miscellaneous Exterior Electrical Items:
   a. First Coat at Galvanized Materials:
      i. Benjamin Moore MO4 Acrylic Metal Primer
      ii. Pittsburgh Paints 90-708 Series Pitt-Tech One-Pack Interior/Exterior Industrial Primer
      iii. Pratt & Lambert Latex Suprime 3
      iv. Sherwin-Williams DTM Acrylic Primer/Finish, B66W1
   b. First Coat at Ferrous Metal Materials:
      i. Benjamin Moore MO4 Acrylic Metal Primer
      ii. Pittsburgh Paints 90-708 Series Pitt-Tech One-Pack Interior/Exterior Industrial Primer
      iii. Pratt & Lambert Latex Suprime 3
      iv. Sherwin-Williams DTM Acrylic Primer/Finish, B66W1
   c. Second Coat:
      i. Benjamin Moore Impervex Enamel 309
      ii. Pittsburgh Paints 90-374 Series Pitt-Tech One-Pack Interior/Exterior Gloss High Performance Industrial Enamel

iii. Pratt & Lambert Latex Accolade Exterior Glass 24300
iv. Sherwin-Williams DTM Acrylic Glass Coating (Water Reducible) B66 Series

2. Interior Exposed Electrical Items in areas where walls and/or ceilings are painted including electrical panels, cabinets, exposed conduit, etc:
   a. First Coat at Galvanized Materials:
      i. Benjamin Moore MO4 Acrylic Metal Primer
      ii. Pittsburgh Paints 90-708 Series Pitt-Tech One-Pack Interior/Exterior Industrial Primer
      iii. Pratt & Lambert Latex Suprime 3
      iv. Sherwin-Williams DTM Acrylic Primer/Finish, B66W1
   b. First Coat at Ferrous Metal Materials:
      i. Benjamin Moore MO4 Acrylic Metal Primer
      ii. Pittsburgh Paints 90-708 Series Pitt-Tech One-Pack Interior/Exterior Industrial Primer
      iii. Pratt & Lambert Latex Suprime 3
      iv. Sherwin-Williams DTM Acrylic Primer/Finish, B66W1
   c. Second Coat:
      i. Benjamin Moore Moorcraft Latex Semi Gloss Enamel 276
      ii. Pittsburgh Paints 90-474 Series Pitt-Tech One-Pack Interior/Exterior Satin High Performance Industrial Enamel
      iii. Pratt & Lambert Pro-Hide + Latex Satin Enamel
      iv. Sherwin-Williams Metalatex Semi Gloss Enamel B-42 Series

PART 3 - EXECUTION

3.01 GENERAL:

A. The painting contractor shall be wholly responsible for the quality of the work and is not to commence any part of it until each surface is in proper condition. All surfaces are to be clean. If for any reason the surface cannot be cleaned, this condition shall be promptly reported to the General Contractor and the Architect prior to commencing with the work.
   1. Surfaces shall be properly prepared, dry, and free of any foreign materials such as dirt, dust, oil, grease, rust, scale, mildew, algae, mold, effervescence, release agents, etc., which will adversely affect adhesion or appearance of applied coating.

B. Examine each surface scheduled to be painted or finished prior to commencing with the work. Report any condition that may potentially affect proper application. **Application of first coat constitutes acceptance of surface as being in fit condition to receive paint.**

C. To prevent contamination of the substrate, apply the prime coat to each surface as soon as possible after surface preparation has been completed.

D. Test shop applied primer for compatibility with subsequent cover materials. Report adverse conditions, if any, to the Architect prior to continuing with the work.

E. The Architect may take samples of materials used on the project for testing purposes. Shall samples not match manufacturer's product specifications, no credit will be given for work covered with the questionable material and any cost of test shall be borne by the painting contractor.

F. Test moisture content of each surface using a properly calibrated electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
   1. Plaster and Gypsum Wallboard: 12 percent.
   2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
   3. Interior Wood: 15 percent, measured in accordance with ASTM D2016.
   4. Exterior Wood: 15 percent, measured in accordance with ASTM D2016.
   5. Concrete Floors: 8 percent.

G. Do not apply paints when the temperature of or on the substrate or the temperature of the air in the vicinity of the painting work is below 45 degrees or above 95 degrees Fahrenheit. Application shall proceed only when relative humidity is between 20 and 80 percent. Exterior and interior latex paints shall not be applied below 50 degrees Fahrenheit unless so authorized in writing by the manufacturer. Epoxy paints and other sophisticated coating shall

not be applied below 50 degrees Fahrenheit unless otherwise noted on the manufacturer's printed instructions.

H. Test Ph of plaster, masonry, and concrete surfaces. Neutralize where required.
I. Remove electrical plates, hardware, light fixture trim, escutcheons, and other miscellaneous fittings prior to preparing surfaces for painting or finishing. Masking will not be accepted.
J. Correct surface defects and clean surfaces which affect work of this section. Remove existing coatings that exhibit loose surface defects.
K. Seal all marks that may bleed through surface finishes with appropriate stain-stopping coating.
L. Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry. Follow manufacturer's recommendations for final preparation.

3.02 PREPARATION OF NEW SURFACES (NOT PREVIOULSY PAINTED):

A. New Gypsum Board and Plaster:
   1. Fill minor defects with filler compound. Spot prime defects after repair.
   2. All surfaces must be free of sanding dust, and joint treatment cement shall be thoroughly dry.
   3. Condition of surface:
      a. Level 5 Drywall Finish typical for exposed-to-view surfaces:
      b. If exposed-to-view gypsum wallboard surfaces have not been finished to Level 5, notify the Architect prior to commencing with work.

B. Concrete and Masonry Walls
   1. No painting shall be done until concrete has cured 60-90 days, and masonry surfaces have cured for 30-60 days **and are dry**.
   2. Thoroughly brush all surfaces with a stiff fiber brush to remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter.
   3. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry.
   4. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water.
   5. Remove form oil from poured-in-place concrete by washing concrete with xylol or form oil solvent, or as required for complete removal.
   6. Fill any remaining cracks, joints, or large voids with prepared patching material.

C. New Concrete Floors
   1. Concrete floors – new/unpainted surfaces: New concrete must cure at least 30-40 days prior to application of materials. Remove all dirt and other debris by sweeping or scraping. Remove grease, oil, tar, form-release oils, or membranes and other contaminants with solvents and/or cleaning solutions. It is very important to have a thoroughly clean surface. All surfaces, whether previously painted or not, must be scrubbed to remove all dirt, oil, wax, or grease using a solution of one cup of trisodium phosphate type cleaner or other washing powder per pail of hot water. After scrubbing, rinse thoroughly with water. Repeat if necessary. A stronger solution may be needed to remove grease and oil, or in the laundry area, to remove deposits of soap. Thoroughly scrape and sand to remove all loose and scaling paint and to lower the gloss of any tightly adhering old paint. Note: Some new concrete may have a surface coating applied or may contain additives that speed up the cure and harden the surface. Such material must be removed by mechanical methods before coating.
   2. How to etch new surfaces of concrete: Carefully prepare a solution of one part full-strength muriatic acid, with three parts water. Always add the acid to the water to prevent the splash of hot acid; don't pour the water into the acid. Use one U.S. gallon (3.78 L.) of solution to 100 square feet (9.3 m) of floor, and scrub well while applying, using stiff-fiber brush. Allow solution to remain on floor until it stops bubbling. Flush off thoroughly with clean water. Flush the surface again if it is not dry in a few hours. Surface must dry uniformly. Puddles will collect and concentrate the cleaning solution, thus affecting the painting result. After surface has dried, vacuum to remove powder that is produced by etching action. Failure to remove this powder will result in poor adhesion. Painting shall

begin when a clean, chemically neutral, dry (less than 15% moisture) surface has been obtained. Follow label instructions. A clean, solid uncontaminated substrate must be provided. In severely contaminated areas, sandblasting or shot blasting may be necessary to remove contaminants that have penetrated the surface. If sandblasting or shot blasting is performed, it is necessary to thoroughly vacuum the surface to remove all dust and fine material prior to painting.

D. Ferrous Metal Surfaces
   1. Wash all surfaces with a solvent to remove dirt, grease and oil.
   2. Touch up all bare metal welded areas around screws and damaged shop coats with specified shop coat primer. Primer on welded areas shall be applied after grinding and after welding flux is removed.

E. Galvanized Metal Surfaces
   1. Aggressively clean surface with mineral spirits. Remove surface contamination and oils and wash with solvent.
   2. Abraded areas that have begun to rust shall be immediately sanded clean and spot primed with a rust inhibiting primer.
   3. Prime with specified primer.

F. Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

G. Aluminum Surfaces in Contact with Incompatible Materials: Apply two coats of bituminous paint; allow to dry.

H. Metals, Structural or Plate Steel
   1. Clean all surfaces of residual deposits of grease and oil.
   2. Clean in accordance with SSPC-SP1-63 "Solvent Cleaning".
   3. Surfaces that exhibit rust formation, mill scale, etc., must be cleaned in accordance with SSPC-SP2-63 or SSPC-SP3-63. Particular care is to be exercised to remove welding flux, slag, and fume deposits. Weld spatters and burrs must be removed. Primer coats shall be applied without delay, before rust reappears.

I. Uncoated Steel and Iron Surfaces: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs. Apply bituminous coating to all steel which is not exposed to view and will be in contact with concrete or masonry.

J. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Prime metal items including shop primed items. All shall receive a zinc-rich primer compatible with epoxy finish coatings.

K. “AESS” Steel components:
   A. Surface Preparation:
      1. Commercial Blast, according to SSPC-SP6.
   B. Additional Surface Preparation, Mixing Instructions, Environmental Conditions, Drying Schedule, and Clean-up:
      1. Follow Manufacturer’s published requirements, recommendations, and guidelines (in that order).

L Copper Surfaces Scheduled for a Natural Oxidized Finish: Remove contamination by applying oxidizing solution of copper acetate and ammonium chloride in acetic acid. Rub on repeatedly for required effect. Once attained, rinse surfaces with clear water and allow to dry.

M. Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with two coats of zinc-rich primer.

N. Asphalt, Creosote, or Bituminous Surfaces Scheduled for Paint Finish:
   1. Remove foreign particles to permit adhesion of finishing materials. Apply latex based compatible sealer or primer.

O. Insulated Coverings:
   1. Remove dirt, grease, and oil from canvas and cotton.

3.03 PREPARATION OF SURFACES (PREVIOUSLY PAINTED)

A. Comply with requirements as specified for preparation of new construction surfaces as well as the following:
   1. Scrub clean existing surfaces with a stiff brush and a solution of clean water ans mild detergent.
   2. Scuff –sand surface to allow new finish to hold.
   3. De-gloss painted surfaces in a manner appropriate to the substrate.
   4. Fill cracks, holes, voids, and defects, and leave a smooth surface ready for application of primer.
   5. Remove loose paint and feather edges or patch as required to provide a smooth, seamless finish.
   6. Prepare a 36” x 36” minimum test area to see is a reaction occurs between existing and new finishes prior to proceeding with the specified work. If a reaction occurs, alert the Architect with a proposed solution prior to proceeding with work.

3.04 COATS

A. All specified products shall be applied at the minimum wet film thickness rate as recommended by the manufacturer.
B. The number of coats scheduled are minimums. Provide paint finishes free from cloudy or mottled surfaces and with complete coverage of even, uniform color. Spot prime or undercoat as necessary for complete coverage.
C. Apply paints and finishes in the order schedules, unless otherwise directed. Where more than one coat of paint is scheduled, tint undercoats to approximately the same color as the finish coat, but vary the shade of succeeding coats for identification.
D. Do not apply succeeding coats until undercoats are thoroughly dry.
E. After completion of work, do all necessary touching up of all the Painting and Finishing and leave the work in perfect condition.
F. Additional coats will be required where finished work is not in complete compliance with all requirements of these specifications, or if complete coverage is not accomplished in the specified number of coats.
G. All coats specified under this division are in addition to shop priming coats specified under other divisions. A completely finished job is required, regardless of whether every individual item is mentioned herein or not.
H. All painting materials and installation procedures shall comply with all Federal Regulations.
I. Coverage and hide shall be complete. When color, stain, dirt or undercoats show through final coat of paint, the surface shall be covered by additional coats until the paint film is of uniform finish, color, appearance and coverage, at no additional cost to the owner.

3.05 SCHEDULE - EXTERIOR SURFACES

A. Steel: Unfinished
   1. One coat of alkyd primer.
   2. Two coats of alkyd enamel, semi-gloss.
B. Steel - Shop Primed:
   1. Touch-up with zinc chromate primer.
   2. Two coats of alkyd enamel, semi-gloss.
C. Steel - Galvanized:
   1. One coat galvanized primer.
   2. Two coats of alkyd enamel, semi-gloss
. D. “AESS” Steel – Galvanized or ungalvanized:
   1. Necessary primer coats to achieve specified mil thickness, applied per Manufacturer’s printed instructions.
   2. Necessary intermediate and top coats to achieve specified mil thickness, applied per Manufacturer’s printed instructions.
E. Aluminum - Mill Finish:
   1. One coat etching primer.
   2. One coat Two coats of alkyd enamel, gloss.

3.06 SCHEDULE - INTERIOR SURFACES

A. Wood - Painted:
   1. One coat of latex prime sealer.
   2. Two coats of latex enamel, semi-gloss.
B. Wood - Transparent:
   1 Filler coat (for open grained wood only).
   2. Two coats of spar-urethane, satin finish. Apply all finishes prior to installation. Touch-up after installation.
C. Concrete, Concrete Block, Restored Masonry Cement Plaster, in typical areas:
   1. One coat of latex filler.
   2. Two coats of latex enamel, semi-gloss.
D. Steel - Primed:
   1. Touch-up with alkyd primer.
   2. Two coats of alkyd enamel, semi-gloss.
E. Steel - Galvanized:
   1. One coat galvanized primer.
   2. Two coats of alkyd enamel, semi-gloss.
F. “AESS” Steel:
   1. Necessary primer coats to achieve specified mil thickness, applied per Manufacturer’s printed instructions.
   2. Necessary intermediate and top coats to achieve specified mil thickness, applied per Manufacturer’s printed instructions.
G. Aluminum - Mill Finish:
   1. One coat etching primer.
   2. One coat Two coats of alkyd enamel, gloss.
H. Concrete Floors, uncolored (see Drawings):
   1. Three coats sealer. Match sealer product used for Colored Concrete (See Concrete Finishing Specification).
I. Plaster, Gypsum Board:
   1. One coat of Latex-based PVC primer sealer.
   2. Two coats of Latex paint, finish as selected.
   3. Terminate paint 1/2” below top of resilient wall base, where scheduled.

3.07 WORKMANSHIP

A. All painting and finishing work shall be done by thoroughly experienced, skilled, competent mechanics and smoothly flowed on without runs, sags, streaks, wrinkles, shiners, or bush marks. Apply proprietary paint products in strict accordance with manufacturer’s instructions.
B. Except where specifically authorized by the Architect, apply flat or eggshell wall paint by brush or roller; apply gloss or semi-gloss with brush only.
C. Sanding: In addition to preparatory sanding, fins sand between succeeding coats of all varnish enamel or flat enamel, using sandpaper appropriate to the finish. Use fine production paper between coats.
D. Painting Contrasting Colors: Cut to meet true lines against contrasting colors. Holidays and restrikes in painted surfaces shall be considered sufficient cause to require recoating of entire surface.
E. Execute all painting and finishing work strictly as per approved color and finish samples. Commencing work before obtaining said approvals is at the contractor's risk.
F. Comply with manufacturer's printed directions on labels of all product containers. Primer and finish coats shall be products of the same manufacturer.
G. All suction spots or "hot spots" in plaster and/or cement after the application of the first coat shall be touched up before applying the second coat.
H. Remove electrical panel box covers and doors before painting walls. Paint separately and reinstall after all paint is dry. Remove all finish hardware from walls, doors and cabinets before painting.

I. Enamel finish applied to metal shall be sanded with fine sandpaper and then cleaned between coats to produce an even surface. All undercoats of paint or enamel to be off shade from other coats such that one coat can be clearly identified from the next.
J. Do all necessary puttying of nail holes, cracks and similar conditions, after first coat, with putty of color matching finish. Bring putty flush with adjoining surfaces.
K. The architect reserves the right to inspect each coat of paint or other finish before application of succeeding coat or else no credit for said coat will be given and the painting contractor automatically assumes responsibility for recoating work in question. Notify architect when each coat is ready for inspection.
L. Finish tops, bottoms, and edges of doors, same as exposed faces. Plastic faced doors with hardwood edges shall have edges stained and finished. Fill edges of exposed plywood doors, panels, and similar materials.
M. Paint all walls and/or framing members behind grilles and at reveals, which will be visible from occupied areas. Paint shall be flat black.
N. Replace hardware after completion as originally installed.

3.08 PRIMING AND BACKPAINTING OF WOOD:

A. All wood which is to be painted, factory finished or otherwise, must be backprimed immediately upon delivery with interior trim primer specified for wood; or with manufacturer's recommended protective pre-treatment for wood which is to have a natural finish.
B. Apply first coat to all wood scheduled to receive natural finish before material is handled at the site by other trades.
C. Furnish sealer to other trades for touching up any bare wood caused by mortising or butting of surfaces, or any kind of assembly or installation.
D. Avoid painting or otherwise staining edges of wood where natural finish is scheduled.

3.09 CLEANING:

A. At conclusion of work and/or when directed, examine all painting and finishing work. Clean paint spots off glass, plaster, metal, fabric wall coverings, wood and other surfaces. Clean and repair paint finish where dark spots, fingerprints, and similar imperfections appear. Said retouching shall exactly match surrounding surfaces. Refinish entire surface in question in order to attain this result if necessary. Leave all painting and finishing in perfect condition.
B. During progress of the work keep premises free from accumulations of tools, equipment, surplus materials and debris. At completion of work leave premises neat and clean.

END OF SECTION 09900

SECTION 10155 – SOLID PLASTIC TOILET PARTITIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:
- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification sections, apply to the work of this section.

1.02 WORK INCLUDED:
- A. Furnishing all materials, labor and equipment to fabricate and install a complete toilet partition system, including all required hardware and accessories for a full installation, as shown on the Drawings and specified herein.
- B. Work shall include installation of salvaged toilet room accessories located directly on toilet partition surfaces, including coat hooks, sanitary napkin disposals and toilet paper holders.
- C. This specification shall apply the toilet partitions and also the bench seats

1.03 RELATED WORK SPECIFIED ELSEWHERE:
NA.

1.04 QUALITY ASSURANCE
- A. Installer Qualifications: Installer shall be factory authorized with not less than three (3) years of experience in successful installations of toilet partition system of type, quantity and installation methods comparable to Work of this section.

1.05 REFERENCE STANDARDS:
- A. Federal Specifications RR-P-1352B.

1.06 SUBMITTALS:
- A. Product Data: Provide product data for toilet partition system, including hardware, headrail and continuous wall brackets, certifying compliance with specified requirements.
- B. Shop Drawings: Submit shop drawings, including details, before ordering, fabricating or installing the work of this section.
  1. Shop drawings shall show locations for any necessary reinforcements in walls to be provided by others for proper and secure installation of the finished work.
- B. Samples: Submit color samples, catalog cut sheets for each item of hardware for Architect's approval. Color will be selected by Architect from manufacturer's standard colors.
- C. Maintenance Instruction: Provide manufacturer's printed instructions for regular post-installation maintenance of partition system and also manufacturer's suggested remedies for minor damage to partition material. Include in project closeout documents.
- D. Technical Data: Submit independent written certification provided by manufacturer that plastic toilet partition system complies with applicable and appropriate building codes governing the Project regarding the use of plastic in a public building.

1.07 PRODUCT HANDLING:
- A. Protect and handle in accordance with manufacturer's recommendations. Maintain manufacturer's protective coverings or wrappings until time of installation.

1.08 COORDINATION:
- A. Provide anchors in ample time when required to be built in by other trades.
- B. Coordinate with Section 10800 for toilet room accessories specified therein, but installed on toilet partitions under the Work of this section.

1.09 WARRANTY:

A. Supply manufacturer's written warranty covering all plastic components and hardware against breakage, corrosion and delamination for 15-year period.

1.10 INCONSISTENCIES:

A. Refer to Section 00100 – Instructions to Bidders for General Contractor, Construction Manager, and/or sub contractor responsibilities pertaining to Specification inconsistencies.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

A. Acceptable Manufacturers: Subject to compliance with requirements, provide a toilet partition system with doors, panels and pilasters of non-corrosive solid high-density polyethylene (HDPE) containing a minimum of 10% recycled material by one of the following:
   1. GLOBAL Partitions, Eastanollee, GA 30538.
   2. Or Architect approved substitution under provisions of Section 01600.

2.02 TOILET PARTITIONS:

A. Toilet compartments shall be floor mounted and overhead braced.
B. Panels, doors and pilasters shall be fabricated from High Density Polyethylene (HDPE) containing a minimum of 10% recycled material manufactured under high pressure forming a single component section which is waterproof, non-absorbent and has a self-lubricating surface that resists marking with pens, pencils or other writing utensils. All panels, doors, and pilasters to arrive at job site with special protective plastic covering.
C. Dual component compression molded HDPE of solid virgin resin materials in colors that extend throughout the surface; panels, doors and pilasters shall have combined recycled and/or virgin HDPE as the core material.
D. Doors, panels and pilasters shall be a minimum of 1" thick and all edges machined to a radius of .250" and all exposed surfaces to be free of saw marks.
E. Fabrication:
   1. Dividing panels shall be 55" high and mounted at 14" above finish floor or to match existing.
   2. Doors shall be 55" high and mounted at 14" above finish floor or to match existing.
   3. Pilasters shall be 82" high, mounted within a one-piece plastic shoe with one-way, theft-proof, stainless steel sex bolts.
   4. Color: Color of doors, panels and pilasters to be Black Confetti 9217 to match existing. Color of Locker Room benches to be Black 2505 . *Use 100% post-consumer recycled material*
      Color of shower stall benches to be Charcoal 9237. *Use 100% post-consumer recycled material*

2.02 PARTITION HARDWARE AND FITTINGS:

A. Door hardware shall be as follows:
   1. Hinges shall be integral hinge system (not surface mounted). Pilaster to be machined to accept door and hinge mechanism. Hinge mechanism consists of a two-piece 1/2" diameter nylon pin with cam action and a 3/16" stainless steel pin inserted into lower portion of pilaster and door. A one-piece 1/2" diameter, 4" long nylon pin to be inserted into the top portion of the pilaster and door. Door closures to be factory set to accommodate all conditions and allow for a positive opening and closing action free of impediment.
   2. Each handicapped stall door to include: (1) door pull and (1) wall stop, toilet partition system manufacturer's standard type.3. Door str
   4. Door latch housing shall be fabricated from heavy aluminum extrusion (6364-T5 alloy) with clear anodized finish, surface mounted and thru-bolted to door with one-way sex

bolts. Slide bolt and button shall be heavy aluminum with Santana “Tuff-Coat Black” finish, or Architect approved equal.

a. Emergency Access Door Slot: For each toilet partition door, provide factory cut 3/8” x 1-1/2” emergency access door slot at latch center. All edges at cut-outs shall be clean and eased. See reference detail at end of this section.

B. Solid color plastic pilaster shoes shall be anchored to finish floor with plastic anchors and 1-1/2” #14 stainless steel Phillips head screws.

C. Full length continuous plastic wall brackets (shall be solid color) weighing not less than 0.822 lbs./linear foot. Brackets shall be used for all panels-to-pilaster, pilasters-to-wall and panel-to-wall connections. Wall brackets shall be thru-bolted to panels and pilasters with one-way sex bolts. Attachment of brackets to adjacent wall construction shall be accomplished by 1-1/2” #14 stainless steel Phillips head screws anchored directly behind the vertical edge of panels and pilasters at 12” intervals along the full length of bracket and at each 12” interval alternately spaced between anchor connections.

D. Headrail shall be heavy aluminum extrusion (6364-T5 alloy) with mill finish in anti-grip configuration weighing not less than 1.188 lbs./linear foot. Headrail shall be fastened to tops of pilasters and headrail brackets by thru-bolting with one-way stainless steel sex bolts. No cadium plated sex bolts allowed.

E. Headrail brackets shall be 18-gauge stainless steel.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Installer must examine the conditions under which the Work of this section is to be performed and notify Contractor in writing of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in manner acceptable to the Installer.

B. Beginning of installation means acceptance of existing conditions and substrates.

3.02 INSTALLATION:

A. Erection of toilet partition system shall be in strict accordance with the manufacturer's standard recommendations and the following:

1. All parts shall be erected in a substantial manner, straight, level and plumb. Screw or bolt all parts tight and anchor securely.
2. Place doors and hardware in correct operating positions.
3. No evidence of drilling, cutting or patching shall be visible in the finished work.
4. Clearance at vertical edges of doors shall be uniform top to bottom and shall not exceed 3/16".

B. Use bolts with lead or steel expansion shields for anchorage to masonry at grouted cells. Use toggle bolts for anchorage to masonry at ungrouted cells.

C. Coordinate with Section 10800 for installation toilet room accessories to be installed directly onto toilet partition surfaces. Installation shall be part of the Work of this section to ensure integrity of toilet partition material and system.

1. Install accessories in accordance with manufacturer's instructions and in full compliance with applicable State of Michigan and federal barrier free requirements.

3.03 CLEAN UP & PROTECTION:

A. Finished surfaces shall be cleaned after installation in strict accordance with manufacturer’s directions and left free of imperfections.

B. Implement procedures and precautions to protect installed toilet partitions from damage caused by work of other trades and other construction activity.

END OF SECTION - 10155

SECTION 10500 - METAL LOCKERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:
- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification sections, apply to the work of this section.

1.02 DESCRIPTION OF WORK:
- A. Furnishing all materials, labor and equipment to provide and install new lockers and accessories as shown on Drawings and specified herein.
- B. Provide 'specialized' lockers as noted herein these specifications and as required for various locations in the facility.
- C. Metal bases, tops, and filler panels as indicated or required
- D. Coordinate with work of other sections and trades as required.

1.03 RELATED SECTIONS:
- A. Section 06100 – Rough Carpentry
- B. Section 09300 – Tile
- C. Section 10800 - Toilet Room Accessories

1.04 REFERENCES:
- A. ADA - Americans with Disabilities Act (ADA) - Locker Hardware
- B. ASTM A446/A446M - Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process, Structural (Physical) - Quality.
- C. ASTM A526/A526M - Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process, Commercial Quality.

1.05 SUBMITTALS:
- A. Product Data: Submit manufacturer's descriptive literature for lockers and accessories showing compliance with specified requirements.
- B. Samples: Submit color samples on squares of same metal to be used for fabrication of lockers.
- C. Shop Drawings: Shop drawings to show locker types and dimensions, locker layout based on field verified dimensions, location of filler panels and other accessories as specified and required for a complete installation, installation details and any other relevant information.

1.06 JOB CONDITIONS:
- A. Do not deliver metal lockers until building is enclosed and ready for locker installation. Protect from damage during delivery, handling, storage, and installation.

1.07 WARRANTY:
- A. Provide manufacturer's full one (1) year warranty against defects in materials and workmanship.

1.08 INCONSISTENCIES:
- A. Refer to Section 00100 – Instructions to Bidders for General Contractor, Construction Manager, and/or sub contractor responsibilities pertaining to Specification inconsistencies.

PART 2 - PRODUCTS

2.01 MANUFACTURERS - GENERAL:
- A. Penco Products, Inc.
- B. List Industries, Inc.
- C. Republic Storage Systems

D. Salisbury Industries
E. Lyon Metal Products, Inc.
F. Industrial Products Division, Republic Steel Corporation
G. Substitutions: Under provisions of Section 01600

2.02 MANUFACTURERS OF SPECIALIZED LOCKERS:

A. Acceptable Manufacturers -- Athletic Lockers: Subject to compliance with requirements, provide athletic locker components by one of the following:
   1. Republic Storage Systems Co., Inc.
   2. List Industries, Inc.
   3. Lyon Metal Products, Inc.
   4. Or Architect approved substitution under provisions of Section 01600.
B. Proprietary names used to indicate a reference standard are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other accepted manufacturers.

2.03 MATERIALS:

A. Sheet Steel: ASTM A446 Grade D, ASTM A526 Coating Designation G90, stretcher leveled; to the following minimum thicknesses:
   1. Body and Shelf: 24 gage.
   2. Door Outer Face: 18 gage.
   3. Door Inner Face: 20 gage.
   4. Door Frame: 16 gage.
   5. Hinges: 14 gage.
   6. Base: 20 gage.
   7. Sloping Top: 20 gage.
   8. Trim: 20 gage.

2.04 FABRICATION GENERAL:

A. Locker Units:
   1. Width: 12 inches
   2. Depth: 12 inches
   3. Height: 60 and 30 (see plans/elevations) inches.
   4. Configuration: single/double (see plans/elevations) tier
   5. Mounting: Surface mounted.
   6. Base: Existing CMU
   7. Base Height: NA
   8. Locking: Equipped for padlock hasps
   9. Ventilation: Yes
   10. Method: Door louvers
B. Locker Body: Formed and flanged; with steel stiffener ribs; electric spot-welded
C. Frames: Formed channel shape, welded and ground flush, welded to body, resilient gaskets and latching for quiet operation.
D. Doors: Hollow channel construction, 1-3/16 inch thick; welded construction, channel reinforced top and bottom with intermediate stiffener ribs, grind and finish edges smooth.
E. Hinges: Two for doors under 42 inches high; three for doors over 42 inches high; weld securely to locker body and door
F. Locking device supplied by Owner.
G. At Barrier Free locker units, provide recessed push-up type hardware, or as required by current ADA specifications.
H. Number Plates: Provide oval shaped brass plates. Form numbers 1 inch high of block font style with ADA designation, in contrasting color.
I. Provide ventilation openings at top and bottom of each locker.
J. Form recess for operating handle and locking device.
K. Finish edges smooth without burrs.
L. Fabricate sloped metal tops, ends, and closure pieces.

M. Provide end panels and filler strips.

2.05 GENERAL:

A. Furnish and install new steel lockers, accessories and finish metal trim as shown or indicated on drawings. Concrete or masonry bases, wood furring, blocking or trim as may be required by drawings are included in other sections of this specification.

B. Construction – typical unless noted differently for specialty lockers herein described:

1. MATERIAL: All major steel parts shall be made of mild cold rolled steel, free from imperfections and capable of taking a high grade enamel finish.
2. FINISH: Surfaces of the steel shall be thoroughly cleaned and phosphatized in a seven-stage process. All parts shall then be finished with a heavy coat of enamel baked on at 300 degrees for 30 minutes, unless noted to be galvanized.
3. DOOR FRAMES: Door frames shall be 16 gauge formed into 1'' wide face channel shapes with a continuous vertical door strike integral with the frame on both sides of the door opening. Double, triple or four tier locker cross frame members shall be 16 gauge channel shaped securely welded to vertical framing members to ensure a square and rigid assembly. Intermediate cross frame members are not required on box lockers.
4. DOORS: Doors shall be 16 gauge or 18 gauge steel for short or narrow doors as required by manufacturer's design, formed with a full channel shape on lock side to fully conceal the lock bar, channel formation on the hinge side and right angle formations across the top and bottom. Single tier doors 60'' and 72'' in height and 18'' or wider shall have a diagonal reinforcing angle welded to the inner surface. A decal with the international symbol of accessibility shall be applied to the face of the locker door.
5. LOCKING DEVICE: All tiered lockers shall be equipped with a positive automatic pre-locking type, whereby locker may be locked while door is open and then closed without unlocking and without damaging locking mechanism.
6. LATCHING: Latching shall be a one-piece, pre-lubricated, spring steel latch completely contained within the lock bar under tension to provide a rattle-free operation. The lock bar shall be of pre-painted, double-channel steel construction. The lock bar shall be securely contained in the door channel by self-lubricating polyethylene guides that isolate the lock bar from metal-to-metal contact with the door. There shall be three latching points for lockers over 42'' in height and two latching points for all tiered lockers 42'' and under in height. The lock bar travel is limited by contacting resilient elastomeric cushioning devices concealed inside the lock bar.
7. RECESSED HANDLE: A non-protruding 14 gauge lifting trigger and slide plate transfer the lifting force for actuating the lock bar when opening the door. The exposed portion of the lifting trigger shall be encased in a molded ABS thermoplastic cover that provides isolation from metal-to-metal contact and be contained in a formed 20 gauge stainless steel. This stainless steel pocket shall contain a recessed area for the various lock types and a mounting area for the number plate.
8. HINGES: Hinges shall be 2'' high, 5-knuckle, full loop, tight pin style, securely welded to frame and double riveted to the inside of the door flange. Locker doors 42'' high and less shall have two hinges. Doors over 42'' shall have three hinges.
9. BODY: The body of the locker shall consist of 24 gauge upright sheets, backs, tops, bottoms and shelves. Tops, bottoms and shelves are flanged on all four sides; backs are flanged on two sides. Uprights shall be offset at the front and flanged at the rear to provide a double lapped rear corner.
10. ASSEMBLY: Assembly of all locker components shall be accomplished by the use of zinc plated, low round head, slotless, fin neck machine screws with hex nuts, producing a strong mechanical connection. -Option: Keps nut and bolts, or rivets may be used for assembly.

2.06 ATHLETIC LOCKERS:

A. General:
   1. All athletic lockers shall be fully welded doors and frames. The Construction Specifications noted herein are “welded frame” per Republic Storage Systems, but others of equal quality and performance will be accepted.

B. Athletic Locker Materials:
   1. Sheet Steel: Prime grade, cold-rolled and leveled steel, free from buckle, scale, and surface imperfections.
   2. Finish: Provide electro-galvanized protective coating. Chemically pretreat metal with degreasing and phosphatizing process. Apply baked-on enamel finish to all surfaces, exposed and concealed, except plates and non-ferrous metal.
      a. Color: All exposed elements shall have a matching color from manufacturer’s complete line.

C. Athletic Locker Components:
   1. DOOR FRAMES: shall be 16 gauge formed into 1" wide face channel shapes with a continuous vertical door strike integral with the frame on both sides of the door opening. Double, triple or four tier locker cross frame members shall be 16 gauge channel shaped securely welded to vertical framing members to ensure a square and rigid assembly. Intermediate cross frame members are not required on box lockers.
   2. DOORS: Single, double and triple tier doors shall be formed from one piece 14 gauge cold rolled sheet steel. Formations shall consist of a full channel shape on the lock side of adequate depth to fully conceal the lock bar, channel formation on the hinge side and right angle formations across the top and bottom. Doors shall have diamond shaped perforations 3/4" wide by 1-1/2" high to provide free airflow while leaving sufficient metal for rigidity and strength.
   3. LATCHING: Latching shall be a one-piece, pre-lubricated spring steel latch, completely contained within the lock bar under tension to provide rattle-free operation. The lock bar shall be of pre-coated, double-channel steel construction. The lock bar shall be securely contained in the door channel by self-lubricating polyethylene guides that isolate the lock bar from metal-to-metal contact with the door. There shall be three latching points for lockers over 42" in height and two latching points for all tiered lockers 42" and under in height. The lock bar travel is limited by contacting resilient high-quality elastomeric cushioning devices concealed inside the lock bar. Frame hooks to accept latching shall be of heavy gauge steel, set close in and welded to the door frame. Continuous vertical door strike shall protect frame hooks from door slam damage. A soft rubber silencer shall be securely installed on each frame hook to absorb the impact caused by closing of the door. A Latch Guard steel plate shall be welded on each frame hook on tiered lockers.
   4. HANDLES - Tiered Lockers: A non-protruding 14 gauge lifting trigger and slide plate shall transfer the lifting force for actuating the lock bar when opening the door. The exposed portion of the lifting trigger shall be encased in a molded ABS thermoplastic cover that provides isolation from metal-to-metal contact and be contained in a formed 20 gauge stainless steel pocket. This stainless steel pocket shall contain a recessed area for the various lock types available and a mounting area for the number plate.
   5. HINGES: Hinges to be 2" high, 5-knuckle, full loop, tight pin style, securely welded to frame and double riveted to the inside of the door flange. Hinges are attached with two rivets. Locker doors 42" high and less shall have two hinges. Doors over 42" high shall have three hinges. An extra hinge shall be provided on 24" wide All Welded Ventilated single and double tier doors.
   6. BODY: Locker body components shall be made of cold rolled steel specially formed for added strength and rigidity and to ensure tight joints at fastening points. 16 gauge side uprights are perforated with diamond-shaped openings 3/4" wide by 1-1/2" high for maximum ventilation. Locker back shall be fabricated from 16 gauge cold rolled sheet steel and formed in combination with the 16 gauge upright to provide a one-piece uniform structure. Tops, bottoms, shelves and compartment dividers shall be 16 gauge steel, fully flanged on all sides for added stiffness. Shelves shall have an additional return flange on the front edge creating a channel shape to rigidize the impact surface. All body parts are finished in the same color selected for doors and frames.

7. INTERIOR EQUIPMENT: Single tier lockers over 42" high shall have one hat/book shelf. Other tiered lockers do not require shelves. All single, double and triple tier lockers shall have one double prong rear hook and two single prong side hooks in each compartment. All hooks shall be made of steel, formed with ball points, zinc-plated and attached with two bolts or rivets. Lockers under 20" high are not equipped with hooks.
8. FILLER PANELS: Provide filler panels where indicated on Drawings, of not less than 16 gauge steel. Determine size by field measurement.
9. NUMBER PLATES: Each locker shall have a polished aluminum number plate with black numerals not less than 1/2" high. Plates shall be attached with rivets to the lower surface within the recessed handle pocket.
10. END FINISHING PANELS: 16-gauge steel, flat sheet type (not box type). Pre-drilled with perimeter holes only. Shall be flat and free of dents or distortion. Make all exposed metal edges safe to touch.
11. Installation Hardware: Galvanized or stainless steel or other non-corrosive material; exposed bolt heads, slotless type; self-locking nuts or locker washers for nuts on moving parts.

2.07 ADA COMPATIBLE LOCKERS – ADDITIONAL INFORMATION:

A. RECESSED HANDLE: A non-protruding 14 gauge lifting trigger and slide plate transfer the lifting force for actuating the lock bar when opening the door. The exposed portion of the lifting trigger shall be encased in a molded ABS thermoplastic cover that provides isolation from metal-to-metal contact and be contained in a formed 20 gauge stainless steel. This stainless steel pocket shall contain a recessed area for the various lock types and a mounting area for the number plate.
B. INTERIOR EQUIPMENT: Parallel Reach Requirement: All single tier lockers shall have a hat/book shelf and coat hooks located no more than 54" off the finished floor. One additional shelf shall be placed near the bottom of the locker so that it is no lower than 9" above the finished floor.
C. Forward Reach Requirement: All single tier lockers shall have a hat/book shelf and coat hooks located no more than 48" off the finished floor. One additional shelf shall be placed near the bottom of the locker so that it is no lower than 15" above the finished floor. All single, double and triple tier lockers shall have one double prong back hook (single prong in 9" width) and two single prong wall hooks in each compartment. All hooks shall be made of steel, formed with ball points, zinc-plated and attached with two bolts or rivets.
D. PLACEMENT OF LOCKER: Locker shall be placed in a location at least 24" away from any wall or other obstacle and have a minimum clear floor space of 30"x48" with a 10" minimum for door swing. The area in front of the locker must be clear within a 60" diameter turning circle to allow for unobstructed access.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Installer shall inspect locations where and conditions under which lockers are to be installed and verify that all surfaces are ready to receive work. Work shall not commence until all unsatisfactory or incomplete conditions are corrected.
B. Beginning work implies that Installer accepts existing conditions.

3.02 INSTALLATION:

A. Install metal lockers at locations shown in accordance with manufacturer's instructions for plumb, level, rigid, and flush installation. Provide all fasteners and hardware necessary for a complete installation. Anchor lockers securely to floor and/or walls.
B. Space fastenings as recommended by manufacturer, and apply through back-up reinforcing plates where necessary to avoid metal distortion. Conceal fasteners insofar as possible.
   1. Coordinate as required with other trades for installation of wood blocking or sleepers in masonry base and sleepers, as required, on wall surface.

C. Coordinate salvaged athletic locker installation with bench installation.

3.03 ADJUST AND CLEAN:

A. Adjust doors and other moving assemblies to operate easily without binding. Verify that integral locking or closure devices and coin collection mechanisms are operating properly.

B. Touch-up marred finishes, but replace units that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

END OF SECTION 10500

SECTION 10800 - TOILET ROOM ACCESSORIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:
- A. Drawings and general provisions of the Contract, including General, Supplementary and Special Conditions and Division 1 Specification sections, apply to work in this section.

1.02 DESCRIPTION OF WORK:
- A. Furnishing all labor, materials and equipment to completely install all items of this section shown on Drawings or specified herein.
- B. Coordinate with others for correct locations of and appropriate clearance for Toiletroom equipment. Inform Architect of any discrepancies prior to installation of equipment or other associated wall finishes.

1.03 RELATED WORK SPECIFIED ELSEWHERE:
- A. Division 4 - Masonry
- B. Section 06100 - Rough Framing.
- C. Section 09250 - Gypsum Drywall System.

1.04 QUALITY ASSURANCE:
- A. Inserts and Anchorages: Furnish inserts and anchoring devices which must be set into concrete or built into masonry; coordinate delivery with other work to avoid delay.
- B. Accessory Locations: Coordinate accessory locations with other work to avoid interference and to assure proper operation and servicing of accessory units.
- C. Single Source Manufacturer: Provide products of same manufacturer for each type of accessory unit, unless otherwise indicated.

1.05 REFERENCES:
- A. ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible To and Usable by Physically Handicapped People.
- B. ANSI/ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strips.
- C. ANSI/ASTM A366 - Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.
- D. ANSI/ASTM A386 - Zinc Coating (Hot-Dip) on Assembled Steel Products.
- E. ANSI/ASTM B456 - Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
- F. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
- G. ASTM A269 - Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

1.06 SUBMITTALS:
- A. Product Data: Provide product data describing size, finish, details of function, installation details for each accessory.
- B. Manufacturer's Installation Instructions: Submit manufacturer's installation instructions, including setting drawings, templates, directions for preparatory work, installation of anchorage devices in other work and sequencing.

1.07 KEYING:
- A. Supply four keys for each lockable accessory to Owner.
- B. Master key all accessories as directed by Owner.

1.08 REGULATORY REQUIREMENTS:
- A. Conform to ANSI A117.1 and applicable State Barrier Free codes for provisions for the physically handicapped.

1.09 SEQUENCING AND SCHEDULING:

A. Coordinate the work of this section with the placement of internal wall reinforcement to receive anchor attachments.

1.10 INCONSISTENCIES:

A. In the case that a discrepancy exists between two or more stated or implied characteristics of any product, assembly, technique, and application, etc., between any one or more Sections of this Project Manual, any one or more Paragraphs of this Specification, or between the Drawings and Specifications, the Contractor's Bid amount shall reflect the most costly version or combination of the requirement(s).

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

A. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Bobrick Washroom Equipment, Inc.
   2. Bradley Corporation, Washroom Accessories Division
   3. Or Architect approved substitution.

B. Proprietary names and/or model numbers used to designate products or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other accepted manufacturers.

2.02 COMPONENTS - TOILET ROOM ACCESSORIES:

A. Handicapped Grab Bars:
   1. At Toilet Room locations as shown on Drawings or required by ADA. Peened non-slip gripping surface approved for barrier free use, with satin finish at ends of bars and on flange. Bobrick B-6206.99 Series, or Architect approved equal. Provide rear-of-toilet horizontal, side-of-toilet horizontal, and side-of-toilet vertical units for each toilet. See Drawings for configurations.
   2. At Shower stall locations as shown on Drawings or required by ADA. Peened non-slip gripping surface approved for barrier free use, with satin finish at ends of bars and on flange. Bobrick B-68616.99 Series, or Architect approved equal.

B. Mirror:
   1. 30" x 36" mirror with No. 1 quality 1/4" mirror glass, type 304 stainless steel frame with satin finish. Bobrick B-165 Series, or Architect approved equal.

C. Undersink Pipe Insulation:
   1. Fully molded closed cell vinyl insulating pipe wrap, coordinate model number with specific plumbing pipe configuration at each required location (coordinate as necessary with Division 15 Mechanical):
      a. Truebro, Inc., "Handi Lav-Guard" Kit - Color: White.
      b. or approved equal.

D. Hand / Hair Dryers:
   1. Hand / Hair dryers shall be American Dryer Series DR-TNSSR, recessed, stainless steel – satin finished, fully-automatic dryers, or Architect's approved equal. Heavy duty. See construction drawing sheet ME1.1, for mfr. information

2.03 MATERIALS:

A. Sheet Steel: ANSI/ASTM A366.
B. Stainless Steel Sheet: ASTM A167, Type 304.
C. Tubing: ASTM A269, stainless steel.
D. Fasteners, Screws, and Bolts: Hot-dip galvanized, tamper proof.
E. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

F. Primer: As recommended by accessory manufacturer.
G. Individually box or wrap each item suitably to prevent damage, with label identifying item and location for same.
H. Provide each item complete with fasteners, anchorages, trim, back-up plates and other incidental items required for fastening to intended substrate.

2.04 FABRICATION:
A. Weld and grind smooth joints of fabricated components.
B. Form exposed surfaces from single sheet of stock, free of joints.
C. Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.
D. Back-paint components where contact is made with building finishes to prevent electrolysis.
E. Shop-assemble components and package complete with anchors and fittings.
F. Provide steel anchor plates, adapters, and anchor components for installation.
G. Hot dip galvanized exposed and painted ferrous metal and fastening devices.

2.05 FACTORY FINISHING:
A. Galvanizing: ANSI/ASTM A386 to 1.25 oz/sq. yd.
B. Shop Primed Ferrous Metals: Pretreat and clean, spray-apply one coat primer and bake.
C. Enamel: Where indicated, pretreat to clean condition, apply one coat primer and minimum two coats baked enamel.
D. Chrome/Nickel Plating: Where indicated, comply with ANSI/ASTM B456, Type SC 2 satin (polished) finish.
E. Stainless Steel: No. 4 satin luster finish typical for items specified herein.

PART 3 - EXECUTION

3.01 EXAMINATION:
A. Installer must examine the conditions under which the Work of this section is to be performed and notify Contractor in writing of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in manner acceptable to the Installer.
B. Beginning of installation means acceptance of existing conditions and substrates.

3.02 PREPARATION:
A. Deliver inserts and rough-in frames to site at appropriate time for building-in.
B. Provide templates and rough-in measurements as required.
C. Verify exact location of accessories for installation. Comply with all applicable barrier free code requirements for mounting heights.

3.03 INSTALLATION:
A. Install fixtures, accessories and items in accordance with manufacturer's instructions.
B. Install plumb and level, securely and rigidly anchored to in-wall blocking or structure and in locations and at mounting heights indicated.
C. Coordinate with framing contractor for required blocking.
D. This contractor shall be responsible to establish the location for all accessories allowing full access to toilet stalls and maintaining required clearances for Barrier Free requirements. Refer to Michigan Barrier Free Requirements for heights and locations of all equipment.

END OF SECTION 10800