COUNTY OF TUSCOLA

DEPARTMENT OF BUILDINGS & GROUNDS

207 E. Grant St
Caro, Michigan 48723-1660
(989)672-3756

MICHAEL MILLER
Director

THOMAS McLANE
Assistant Director

TO: INTRESTED CONTRACTORS

FROM: MIKE MILLER

DATE: July 9th , 2012

RE: Additional Jail Showers

Tuscola County will be accepting bids on the possible construction of converting two existing store rooms into showers at the County Jail. The following specifications shall be considered in your bid:

1. Contractor is to follow all local, State, and Federal building codes.
2. Contractor is responsible for any needed permits.
3. **Contractor is to follow all specifications as provided Landmark Design Group P.C.**
4. Contractor is to provide a 5% bid bond.
5. Contractor is responsible for clean up of jobsite.
6. Contractor shall be insured and provides copies of Work comp. and Liability before work begins.
7. All work shall be performed by qualified personnel.
8. Bid should contain an estimated start date.

Jail is located at 420 Court St Caro MI 48723

Closed sealed proposals shall be submitted to the Tuscola County Purdy Building 125 W. Lincoln St Caro Mi 48723 no later than 4:30 pm on July 31st, 2012.

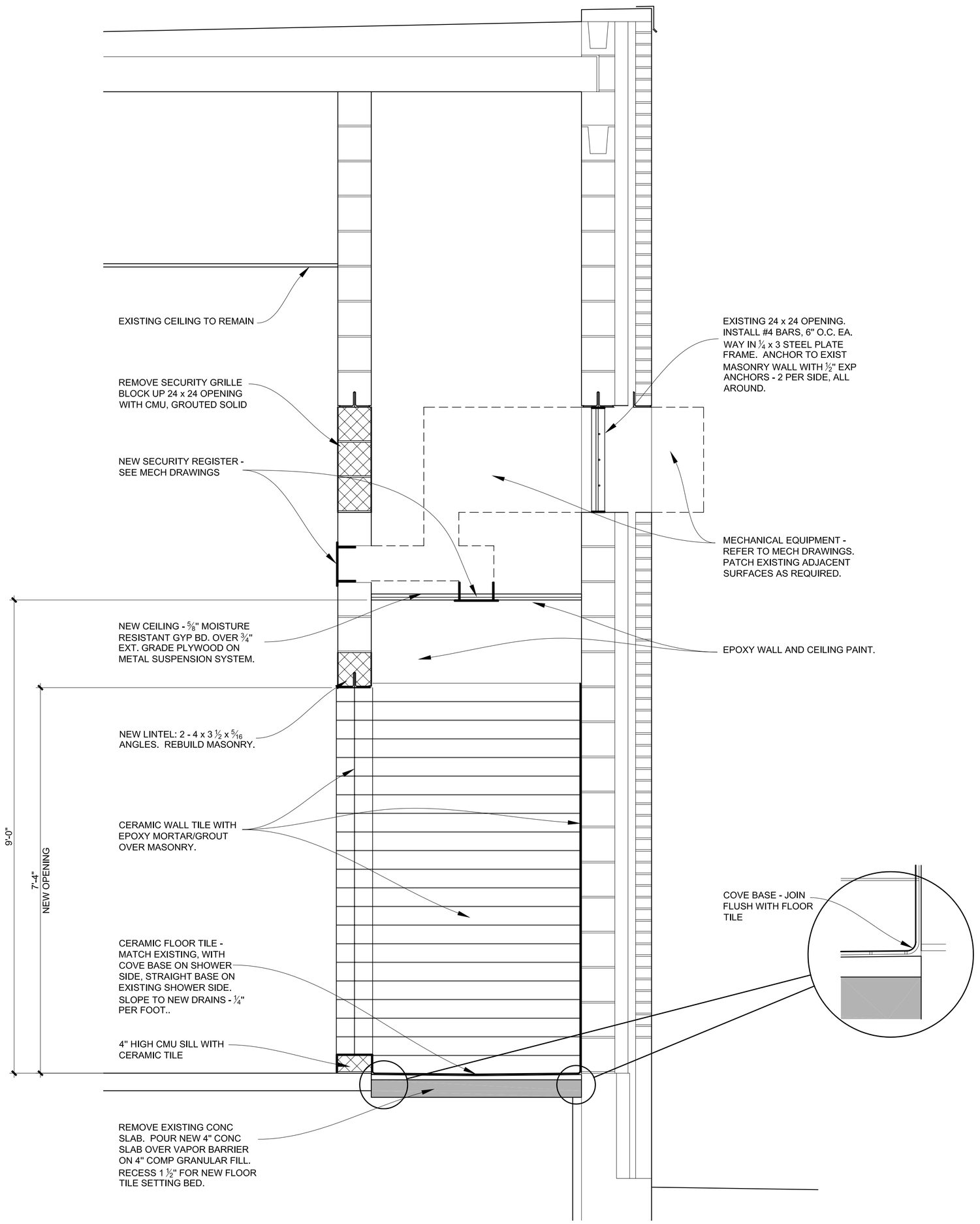
Please call 989-672-3756 if you have questions.

Disclaimer

Tuscola County reserves the right at its sole discretion to reject any and all proposals received without penalty and not to enter a contract as a result of this RFP. The County also reserves the right to negotiate separately with any source whatsoever in any manner necessary to attend to the best interests of the County, to waive irregularities in any proposal and to accept a proposal which best meets the needs of the County, irrespective of the bid price."

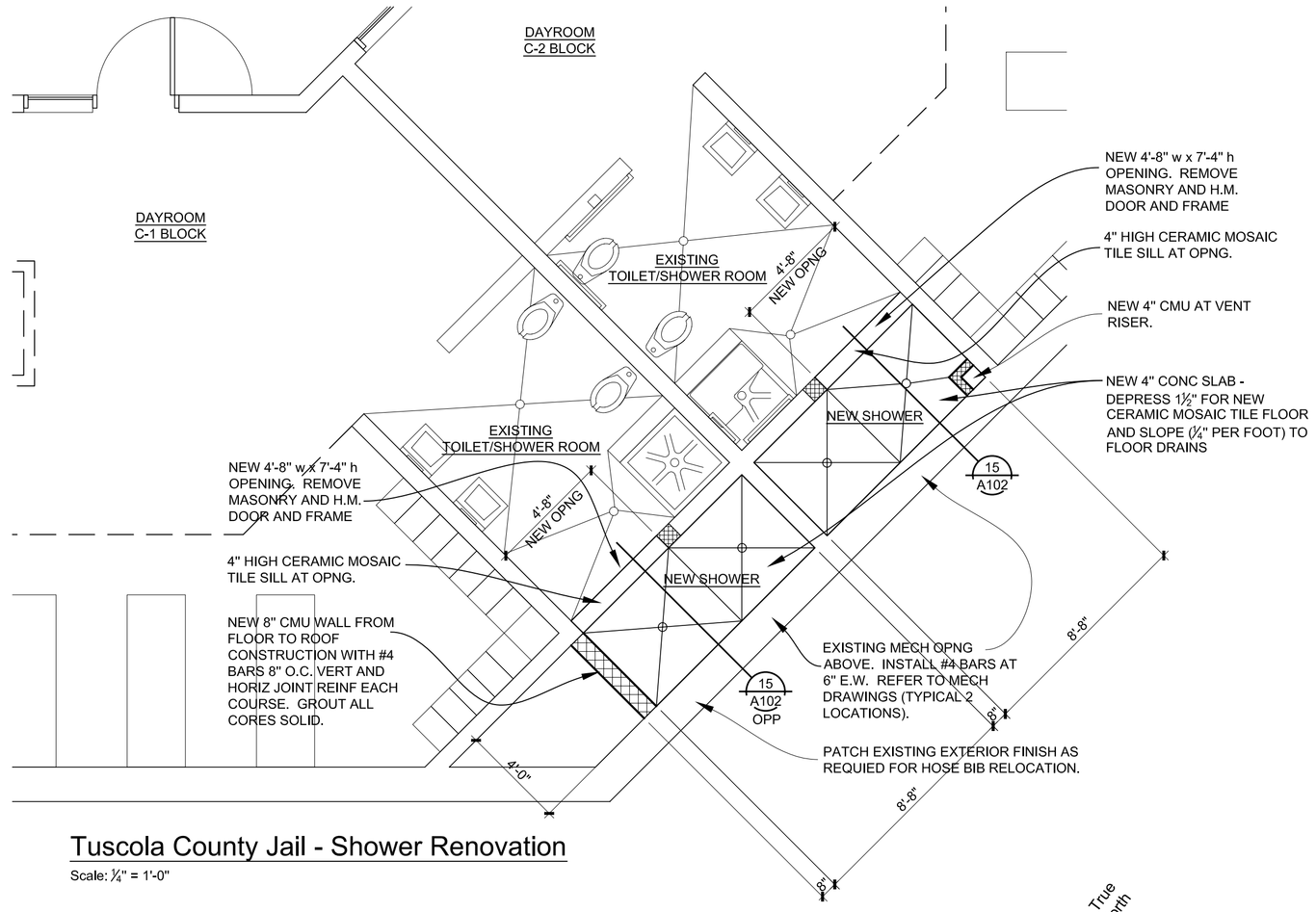
By submitting a bid, the bidder is acknowledging that there will be no contractual relationship between Tuscola County and the bidder until both parties have formally approved and signed a written contract to be developed by Tuscola County legal counsel.

The County reserves the right to make an award without further discussion of any proposal submitted. Therefore, the proposal should be submitted initially on the most favorable terms which the offer can propose. There will be no best and final offer procedure. The County does reserve the right to contact an offer for clarification of its proposal."



NOTE
REFER TO MECHANICAL DRAWINGS FOR DUCTWORK AND GRILLES TO BE REMOVED. FILL OPENINGS WITH NEW CMU, GROUTED SOLID.

Shower Section - Typical for Two	15
Note:	Scale: 3/4" = 1'-0"



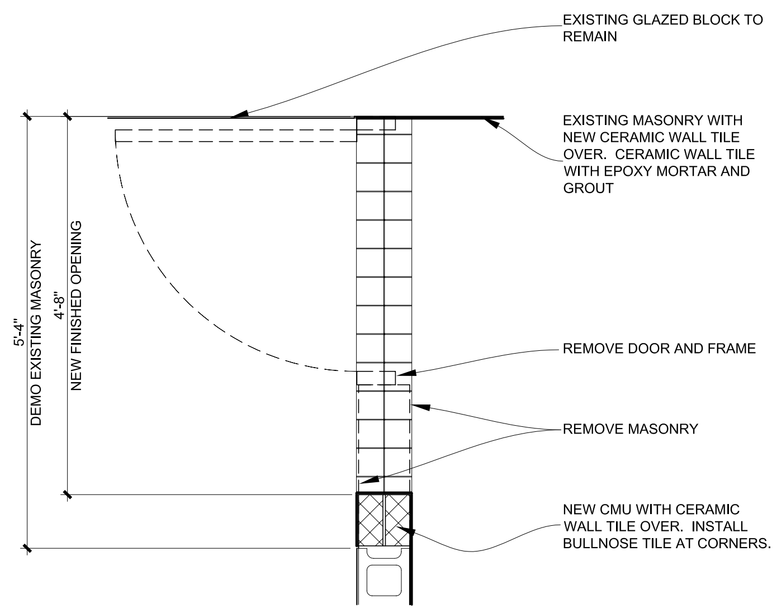
Tuscola County Jail - Shower Renovation
Scale: 1/4" = 1'-0"

Enlarged Floor Plan	Called North 01
Note:	Scale: 1/4" = 1'-0"

GENERAL NOTES

1. EXPOSED OUTSIDE CORNERS OF NEW CMU SHALL BE BULLNOSE UNLESS FINISHED WITH CERAMIC TILE.
2. REMOVE MASONRY, FLOORS, DOORS AND FRAMES AS REQUIRED FOR DESIGN INTENT.
3. FILL ALL OPENINGS DUE TO DEMOLITION OF MECHANICAL AND ELECTRICAL EQUIPMENT UNLESS NOTED OTHERWISE.
4. PATCH AND/OR PAINT ALL ADJACENT SURFACES WITH MATCHING FINISHES UNLESS NOTED OTHERWISE, DUE TO DEMOLITION/CONSTRUCTION ACTIVITIES.
5. ALL NEW MASONRY SHALL BE GROUTED SOLID.
6. ALL FASTENER, SCREWS, ETC. SHALL BE TAMPER RESISTANT TYPE FOR USE IN A JAIL.
7. DEMOLISH ALL ITEMS REQUIRED FOR NEW CONSTRUCTION, WHETHER INDICATED OR NOT ON THE DRAWINGS.

General Notes	14
Note:	



New Opening - Typical for Two	13
Note:	Scale: 3/4" = 1'-0"

Consultant:

Tuscola County Jail
C Block Shower Addition
Caro, Michigan

Project Title:

Landmark Design Group, P.C.
3900 Linden Ave. S.E. Suite C, Grand Rapids, MI 49548-3406
v: (616) 956-0606

issued for: Bids and Permits
date: 07-09-2012

Seal:

Project Number:

Landmark Project Number: 12-005

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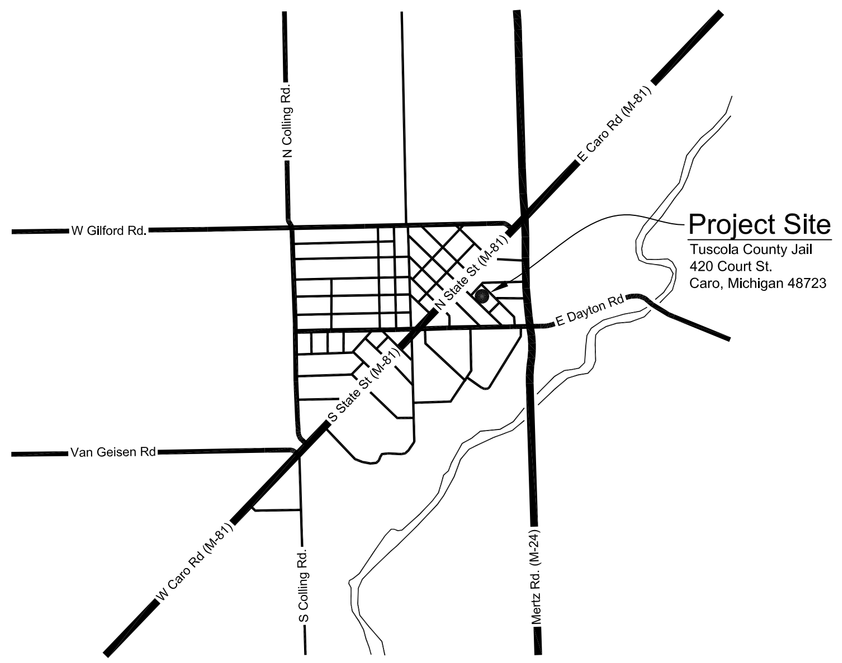
Tuscola County Jail

420 Court St., Caro, Michigan 48723

C Block Shower Addition



Location Plan	11
Note:	Scale: None

Sheet Index

Sheet Index	06
Note:	

Proposed Design Rated Bed Capacity

Cell Block C-1

Present Capacity = 15 Beds

Proposed Capacity = 18 Beds

Cell Block C-2

Present Capacity = 15 Beds

Proposed Capacity = 17 Beds

General Notes	10
Note:	Scale: None

Alternate Bid One - Shower Seamless Paint System

Alternate 1A - In lieu of the ceramic wall and floor tile, epoxy painted wall and ceiling finishes in the new showers, all shower floors, walls and ceilings shall receive a seamless paint system. This cost shall include deleting the specified ceramic floor and wall tile.

Alternate 1B - Provide the Owner with a separate cost to finish the existing showers with the seamless paint system.

Contact Information:

Prime Coat Coating Systems
4331 Minges Rd.
Battle Creek, MI 49015
Contact Robert Vocke (269) 274-4952

Code Information	14
Note:	

Project Title	01
Note:	

Owner
Tuscola County
125 W Lincoln
Caro, MI 48723

Contact: Mike Miller
Buildings and Grounds Director
(989) 672-3756

Architect
Landmark Design Group, P.C.
3900 Linden Ave SE
Grand Rapids, MI 49548
V: (616) 956-0606

Mechanical/Electrical Engineer
Morgan M. Landon P.E. LLC
2054 Brandon Drive NW
Grand Rapids, MI 49504
V: (616) 608-3372
F: (616) 608-3372

Addresses	13
Note:	

Consultant:

Tuscola County Jail
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G001

General Mechanical Requirements

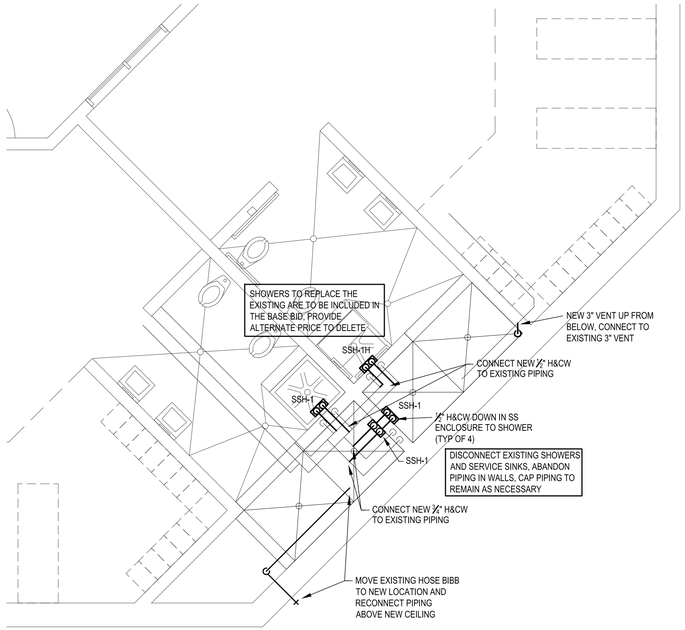
1. All system and installation shall conform to all applicable code requirements.
2. All drawings are diagrammatic in nature, and are not intended to show every joint, fitting, or offset that may be required to properly complete the system. The contractor shall coordinate the installation with all trades, and provide all fittings, offsets, and re-routing as may be required.
3. The completed installation shall result in properly operating systems.
4. The contractor shall provide and pay for all work, material, and labor to establish complete and properly working systems.
5. The contractor shall obtain and pay for all required permits and inspections as a part of his base bid for the project.
6. Remove and replace existing ceilings as necessary to perform work required above ceilings.

Plumbing Equipment

SSH-1 Willoughby CWSMS-PM2-FX-NPS-RD-PS-MOD, surface mounted stainless steel security shower. Push button control for dual temperature control valve with hot and cold water from building system, single fixed penal shower head, recessed soap dish and pipe enclosure to ceiling (new or existing).

SSH-1H Same as SSH-1 except dual fixed heads for barrier free installation.

FD New floor drains to be 2"Ø cast iron body with perforated grate, tamper resistant fasteners.



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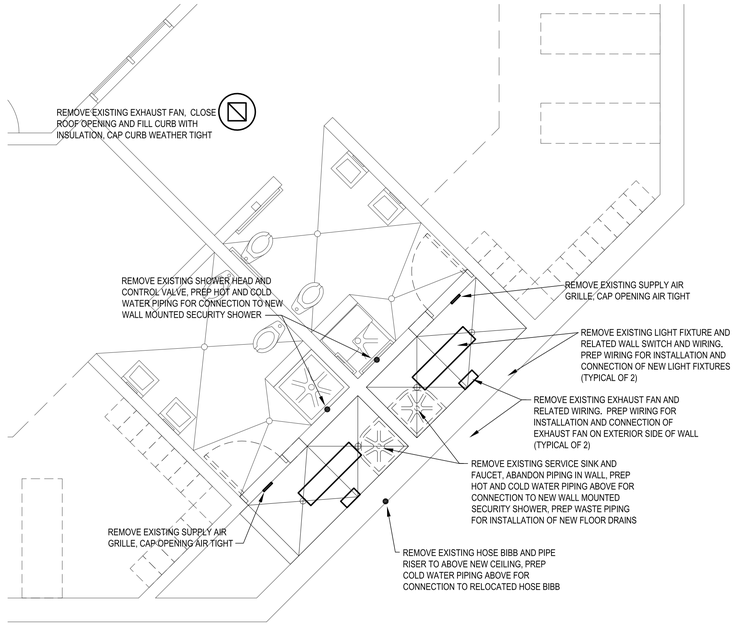
PLUMBING FLOOR PLAN

1/4" = 1' - 0"



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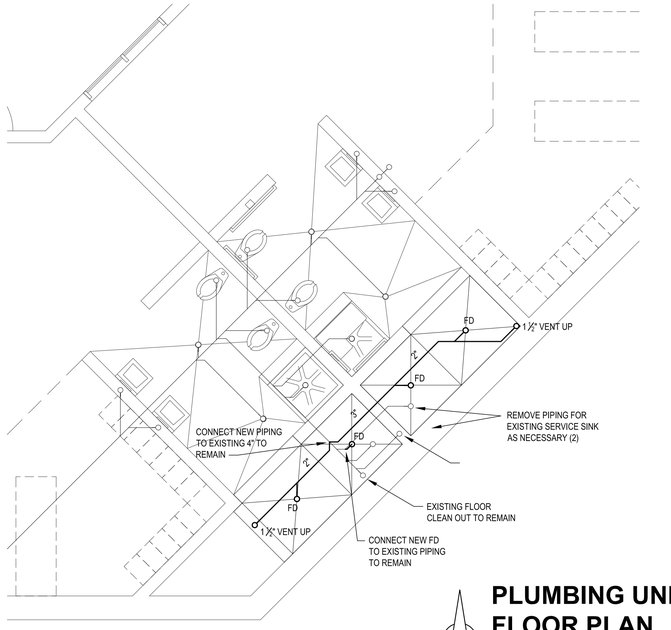
DEMOLITION FLOOR PLAN

1/4" = 1' - 0"



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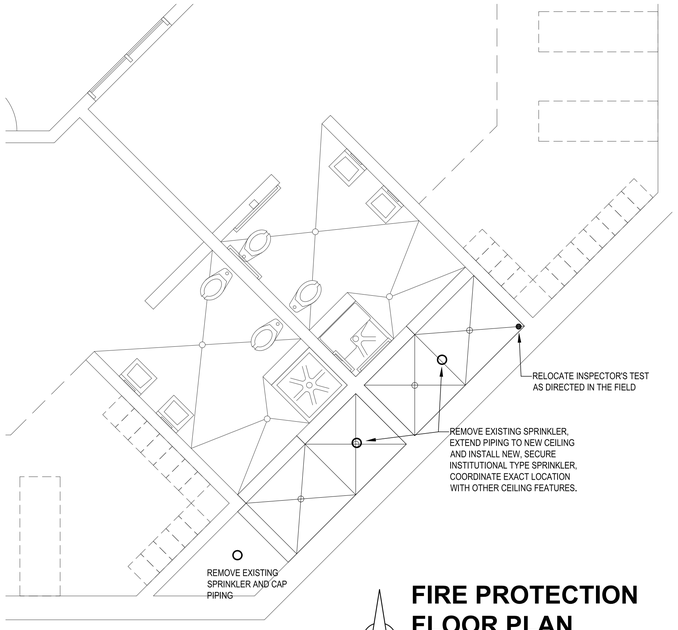
PLUMBING UNDER FLOOR PLAN

1/4" = 1' - 0"



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FIRE PROTECTION FLOOR PLAN

1/4" = 1' - 0"

MORGAN M. LANDON, PE, LLC
2054 Brandon Drive NW
Grand Rapids, Michigan 49504
616-608-3372 fax 616-608-3372
morgan@mlandon.com
Consultant:

Tuscola County Jail
C Block Shower Addition
Caro, Michigan

Project Title:

Landmark Design Group, P.C.
3900 Linden Ave. S.E. Suite C, Grand Rapids, MI 49548-3406
v: (616) 956-0606

issued for:	date:
Bids and Permits	07-09-2012

Seal:

Project Number:

Landmark Project Number: 12-005

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Mechanical Equipment

EH-1 — Q-Mark Model EFF CUSTOM, ceiling mounted electric heater, 1.5 KW, 208 volt single phase, self-contained temperature controller, ALUMINUM face plate, TAMPER resistant fastener for cover.

EH-2 — Same as EH-1.

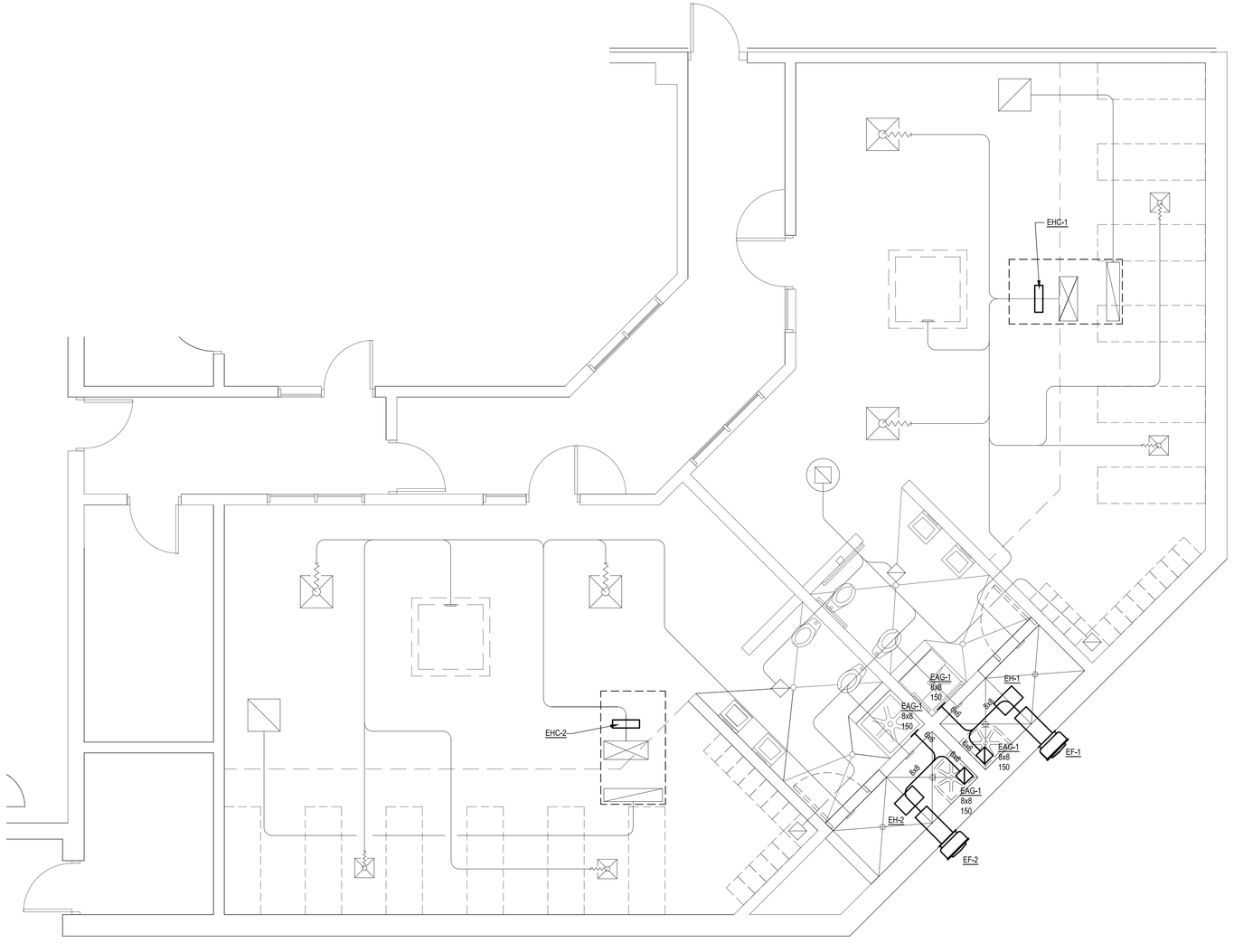
EHC-1 — Duct mounted electric heating coil. Duct size is 20X12 (confirm in field before ordering coil). 7.5 KW, 208 volt three phase (confirm electrical characteristics before ordering coil). SCR modulating control, provide new duct mounted temperature sensor to control pre-set discharge supply air temperature. Connect power from associated roof top unit and control to prevent operation of new heating coil when unit is providing air conditioning to the space. Confirm outside air minimum is set to 300 CFM.

EHC-2 — Same as EHC-1.

EF-1 — Greenheck CW-080, sidewall mounted exhaust fan, direct drive, 1/20 HP, 120 volt single phase, 300 CFM @ 1/2" SP. Provide with integral disconnect and birdscreen. 10 1/2" x 10 1/2" opening through wall with burglar bars on 6" centers. Extend power from former exhaust fan to this new fan, interlock to run when associated roof top unit runs.

EF-2 — Same as EF-1.

EAG-1 — Surface mounted aluminum grid core exhaust air grille, all aluminum, no integral damper.



MORGAN M. LANDON, PE, LLC
2054 Brandon Drive NW
Grand Rapids, Michigan 49504
616-608-3372 fax 616-608-3372
morgan@mlandon.com
Consultant:

Tuscola County Jail
C Block Shower Addition
Caro, Michigan

Project Title:

Landmark Design Group, P.C.
3900 Linden Ave. S.E. Suite C, Grand Rapids, MI 49548-3406
v: (616) 956-0606

issued for:	date:
Bids and Permits	07-09-2012

Seal:

Project Number:

Landmark Project Number:
12-005

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General Electrical Requirements

1. All work is to performed in strict accordance with the national electric code, state laws, and all other regulations governing work of this nature.
2. The contractor shall provide and pay for all work, material, and labor to establish complete and properly working systems.
3. The contractor shall obtain and pay for all required permits, applications and fees as may be necessary to complete the work.
4. Final routing of all conduits shall be established by the electrical contractor in coordination with the work of all other trades.
5. Field mounted devices such as switches, motor staters, receptacles, etc., are shown in their approximate locations unless noted to the contrary on the plans. Coordinate exact locations based on actual field conditions.
6. All power wiring shall be stranded copper conductor with thhn insulation rated 600 volts. Minimum wire size, 12 awg.
7. Remove existing lighting, reuse wiring and extend as necessary to serve new lights.
8. Remove abandoned wiring and conduit back to panel.
9. New conduit to distribution panels and HVAC equipment shall be emt.
10. New branch circuit conduit shall be emt.
11. The electrical contractor shall properly ground all systems and equipment in accordance with the requirements of the national electric code.
12. All materials and equipment provided for this project shall be new and UL approved for the intended use.
13. The contractor shall perform all required testing of all electrical systems. The contractor shall correct all defects indicated by testing and then retest until satisfactory results are obtained.
14. No equipment shall be energized until all tests and adjustments have been completed.

Electrical Equipment

EH-1 1.5 KW, 208 volt single phase, provide new dedicated circuit with 20A breaker in existing Panel "W".

EH-2 Same as EH-1.

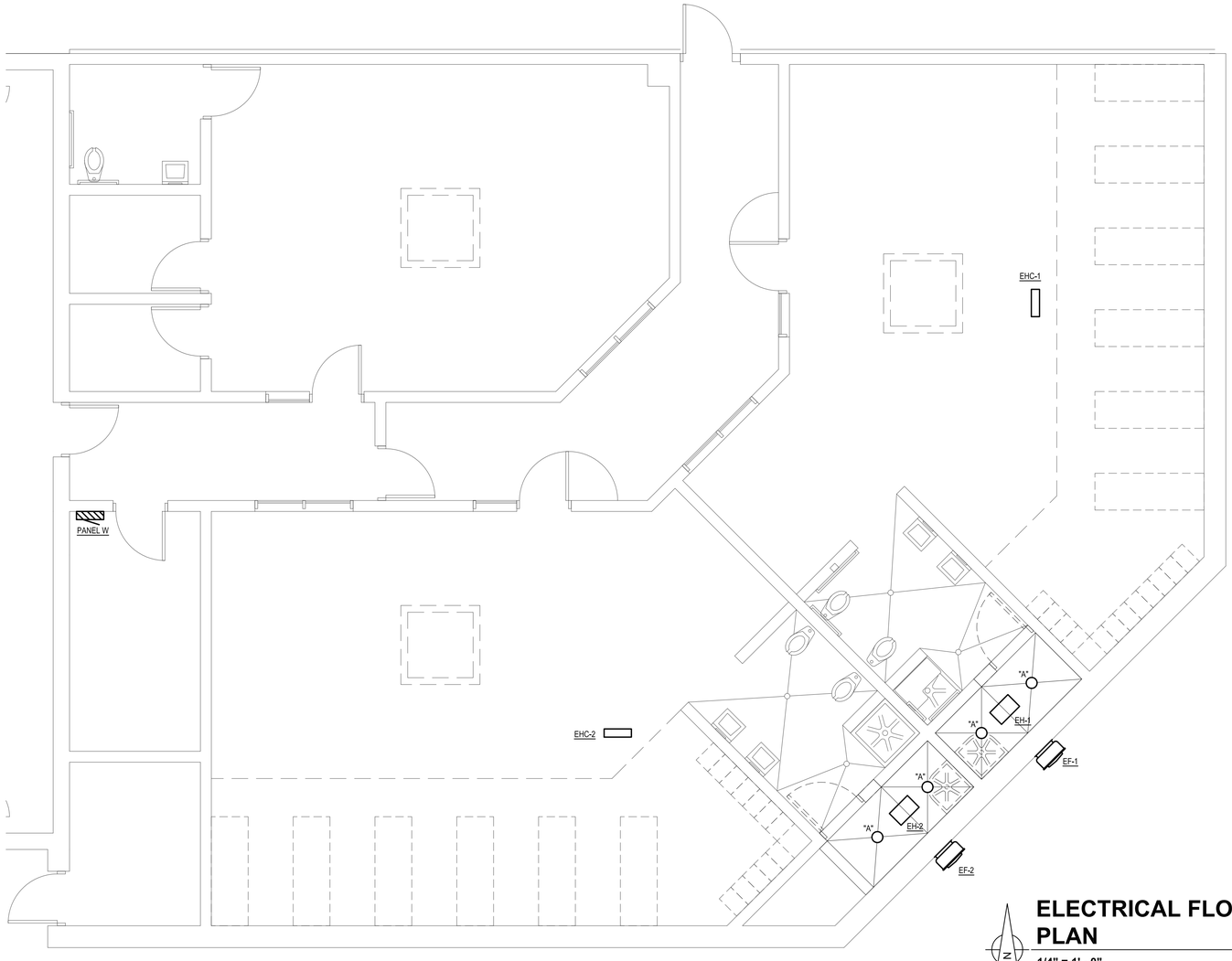
EHC-1 7.5 KW, 208 volt, three phase (confirm electrical characteristics before installation). Wire SCR modulating control from new duct mounted temperature senser to control pre-set discharge supply air temperature. Connect power from associated roof top unit and control to prevent operation of new heating coil when unit is providing air conditioning to the space.

EHC-2 Same as EHC-1.

EF-1 120V / 1Ø, 1/20 HP, connect to power from former wall exhaust fan, interlock to run with associated RTU.

EF-2 Same as EF-1.

"A" Kenall SSQA Series, 14 ga brushed stainless steel, (2) 26w CFL, rapid start electronic ballast (1), 120 volt single phase, .187 clear polycarbonate inner lens, .156 prismatic polycarbonate outer lens, Torx Head with center pin fasteners, PL night light (5w) on at all times, UV filter coating, wet location listed.



ELECTRICAL FLOOR PLAN

1/4" = 1' - 0"

MORGAN M. LANDON, PE, LLC
2054 Brandon Drive NW
Grand Rapids, Michigan 49504
616-608-3372 fax 616-608-3372
morgan@mlandon.com
Consultant:

Tuscola County Jail
C Block Shower Addition
Caro, Michigan

Project Title:

Landmark Design Group, P.C.
3900 Linden Ave. S.E. Suite C, Grand Rapids, MI 49548-3406
v: (616) 956-0606

issued for:	date:
Bids and Permits	07-09-2012

Seal:

Project Number:

Landmark Project Number: 12-005

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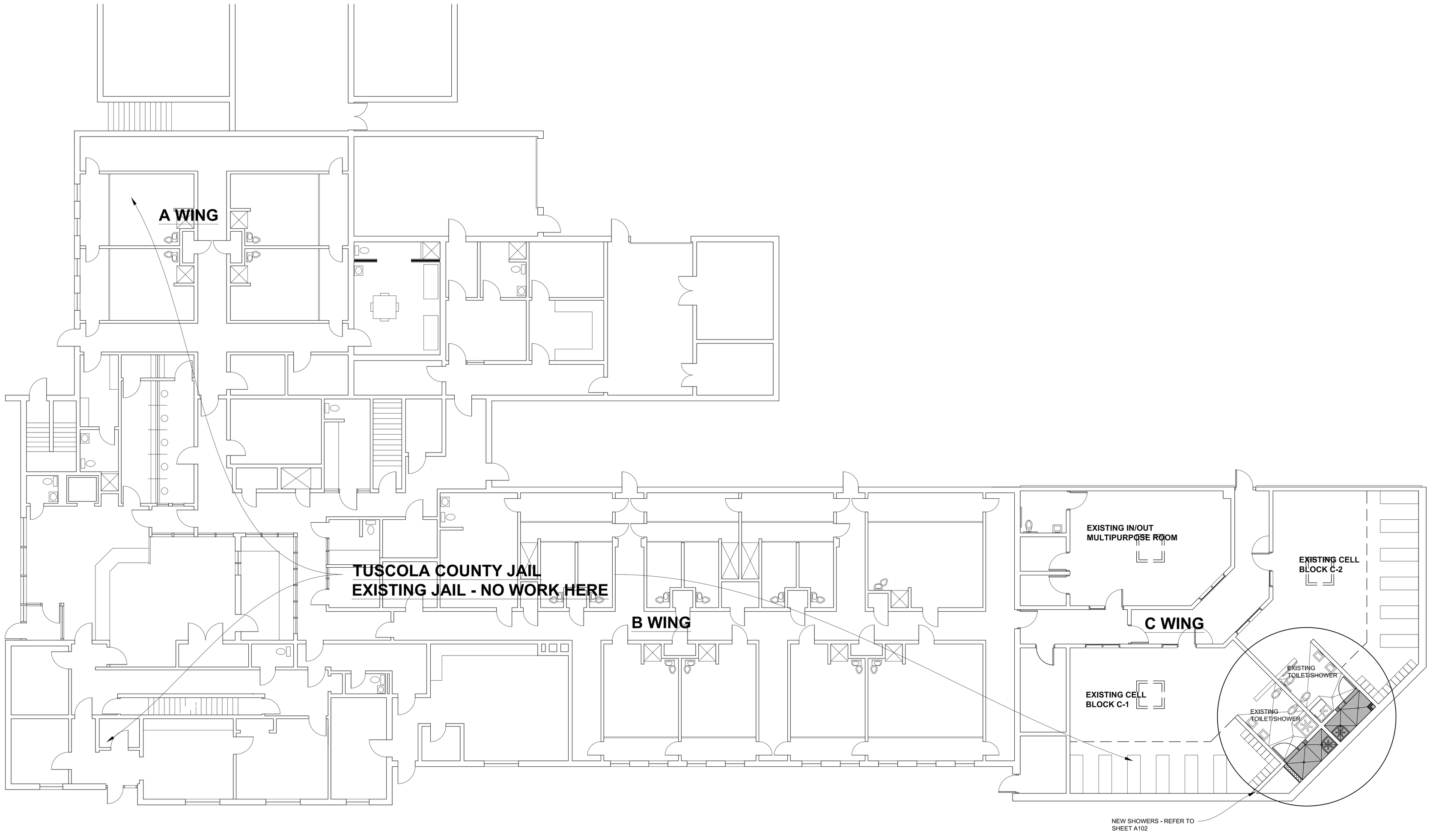

True North

Overall Jail Floor Plan — Called North — 01

Note: — Scale: 1/8" = 1'-0"

Consultant:

Tuscola County Jail
C Block Shower Addition
Caro, Michigan

Project Title:

Landmark Design Group, P.C.
3900 Linden Ave. S.E. Suite C, Grand Rapids, MI 49548-3406
v: (616) 956-0606

issued for:	date:
Bids and Permits	07-09-2012

Seal:

Project Number:

Landmark Project Number: 12-005

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Job Number: 12-005

Tuscola County Jail
C-Block Shower Addition

420 Court Street
Caro, Michigan 48723

July 9, 2012

Project Team:

Architect:

Landmark Design Group, P.C.
3900 Linden Avenue, S.E. Suite C
Grand Rapids, Michigan 49548
P: (616) 956-0606

Mechanical / Electrical Engineer:

Morgan M. Landon P.E. LLC
2054 Brandon Drive NW
Grand Rapids, Michigan 49504
P: (616) 608-3372
F: (616) 791-0968

Owner Contact

Tuscola County
Mike Miller
Building and Grounds Director
125 W. Lincoln St.
Caro, Michigan 48723
P: (989) 672-3756

PROJECT MANUAL CONTENTS

Not Used

DIVISION 7 THERMAL AND MOISTURE PROTECTION

Not Used

DIVISION 8 DOORS AND WINDOWS

Not Used

DIVISION 9 FINISHES

09250 Gypsum Board Systems
09300 Tile
09900 Painting

DIVISION 10 SPECIALTIES

Not Used

DIVISION 11 EQUIPMENT

Not Used

DIVISION 12 FURNISHINGS

Not Used

DIVISION 13 SPECIAL CONSTRUCTION

Not Used

DIVISION 14 CONVEYING SYSTEMS

Not Used

DIVISION 21 FIRE PROTECTION SYSTEMS

21 00 50 General Fire Protection Systems Requirements
21 05 00 Common Work Results for Fire Suppression
21 13 13 Wet-Pipe Sprinkler Systems

DIVISION 22 PLUMBING SYSTEMS

22 00 50 General Plumbing Systems Requirements
22 05 53 Identification for Plumbing Piping and Equipment
22 07 00 Plumbing Insulation
22 11 00 Facility Water Distribution
22 13 00 Facility Sanitary Waste and Vent Systems
22 45 00 Security Plumbing Fixtures

DIVISION 23 HVAC SYTEMS

23 00 50 General HVAC Systems Requirements

DOCUMENT 00030
ADVERTISEMENT FOR BIDS

Owner: Tuscola County
125 W Lincoln Street
Caro, MI 48723

Architect: Landmark Design Group, P.C.
3900 Linden, SE, Suite C
Grand Rapids, Michigan 49548
Telephone: (616) 956-0606

Issue Date: July 9, 2012

General Contractors are invited to submit a bid under seal to Tuscola County. Bids shall be delivered to:

Tuscola County
125 W Lincoln Street
Caro, MI 48723
Attn Mike Miller, Building and Grounds Director

Before 4:30 p.m. local time on Tuesday July 31, 2012

The work is described as follows:

> Renovate two janitor closets into new shower stalls in Cell Block C-1 and C-2. Work includes removal and replacement of concrete slabs, underfloor plumbing, door and wall removal, masonry, miscellaneous steel, carpentry, gypsum board, finishes, plumbing, fire protection, HVAC and electrical.

The project location is the Tuscola County Jail, 420 Court Street, Caro, MI 48723

A pre-bid inspection can be scheduled by contacting the Tuscola County Building and Grounds Director, Mike Miller at (989) 672-3756.

Bid Documents are available by contacting the Tuscola County Building and Grounds Director at (989) 672-3756.

Bid security shall accompany bid in the form of a bid bond, certified check, or cashiers check for no less than five (5%) percent of the Bid Price.

Refer to Instructions to Bidders in the Project Manual for full bidding requirements.

Your offer will be required to be submitted under a condition of irrevocability for a period of 90 days after submission.

The Owner reserves the right to reject any and all bids, to award the agreement to other than the low bid, to award separate agreements for separate parts of the services required, to negotiate the terms and conditions of all and any part of the bids, to waive irregularities and/or formalities, and in general to make award in the manner as determined to be in the Owner's best interest at its sole discretion.

END OF DOCUMENT

DOCUMENT 00100
INSTRUCTIONS TO BIDDERS

1.01 DEFINITIONS

A. Bid Documents include the Bidding Requirements and the Contract Documents. The Bidding Requirements consist of the Advertisement for Bids, Instructions to Bidders, Information Available to Bidders, the Bid Form, and Supplements to Bid Form. The Contract Documents consist of the Agreement between the Owner and Contractor, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, and all Addenda issued prior to execution of the Contract. The Bidding Requirements are intended to form part of the Contract Documents and shall be enumerated in the Agreement between the Owner and Contractor.

B. Definitions set forth in the General Conditions of the Contract for Construction, AIA Document A201, or in other Contract Documents are applicable to the Bid Documents.

C. Addenda are written or graphic instruments issued by the Architect/Engineer prior to the execution of the Contract which modify or interpret the Bid Documents by additions, deletions, clarifications or corrections.

D. A Bid is a complete, properly signed and sealed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bid Documents.

E. The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bid Documents as the base, to which work may be added or from which work may be deleted for sums stated in Alternate Bids.

F. An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bid Documents, is accepted.

G. A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, services, or a portion of the work as described in the Bid Documents.

H. A Bidder is a person or entity who submits a Bid.

I. A Sub-bidder is a person or entity who submits a bid to a Bidder for materials or labor for a portion of the Work.

1.02 BIDDER'S REPRESENTATION

A. The Bidder by making a Bid represents that:

1. The Bidder has read and understands the Bid Documents and the Bid is made in accordance therewith.

2. The Bidder has read and understands the Bid Documents and Contract Documents, to the extent that such documentation related to the Work for which the Bid is submitted, for other portions of the Project, if any, being bid concurrently or presently under construction.

3. The Bidder has visited the site, become familiar with local conditions under which the Work is to be performed and has correlated the Bidder's personal observations with the requirements of the Contract Documents.

4. The Bid is based upon the materials, equipment, and systems required in the Bid Documents without exception.

1.03 AVAILABILITY OF DOCUMENTS

A. Bid Documents are made available only for the purpose of obtaining offers for this project. Their use does not grant a license for other purposes.

B. Bid Documents are interrelated and cross-referenced; bids must be made on a complete review of all information. No partial sets will be available.

C. Bid Documents may be obtained by bidders from the owner.

D. Bid Documents can be obtained by general contract and subcontract Bidders upon receipt of deposits as described in the Advertisement for Bids.

E. Deposit will be refunded only if Bid Documents are returned complete, undamaged, unmarked and reusable, within 14 calendar days of Bid submission. Failure to comply will result in forfeiture of deposit.

F. Copies of the Agreement and General Conditions of the Contract are available for review at the office of the Architect/Engineer. Copies can also be purchased by contacting the Michigan American Institute of Architects (AIA).

1.04 EXAMINATION OF DOCUMENTS, SITE AND LOCAL CONDITIONS

A. Before submitting bids, bidders shall carefully examine all Drawings, read the entire Project Manual, and all Contract Documents, including all Addenda. Bidders shall visit the site in order to inform themselves of all conditions, which can affect the work or the cost thereof. Failure or omission of bidder to receive or examine any form, instrument, Addendum or other document, or to visit the site and acquaint himself with existing conditions shall in no way relieve any bidder from obligation with respect to his bid.

B. Upon receipt of Bid Documents verify that documents are complete. Notify Architect/Engineer should the documents be incomplete.

C. Immediately notify the Architect/Engineer upon finding discrepancies or omissions in the Bid Documents.

D. The project location is the existing county jail which can be examined during the prebid meeting. Additional site visits can be arranged with the Tuscola County Maintenance offices, contact Building and Grounds Director, Mike Miller at (989) 672-3756.

1.05 INTERPRETATION DURING BIDDING

A. Direct all questions in writing to Landmark Design Group, P.C. by fax at (616) 956-9406 or email at steve@landmark.us.com or by mail to 3900 Linden, SE, Suite C, Grand Rapids, Michigan 49548. Include with all questions, name of project, return name, and telephone and fax numbers. Use the Request for Information form contained in Section 01040 – Coordination of the Project Manual.

B. Addenda may be issued during the Bidding period, a copy of which will be forwarded to each known General Contract Bidder and each Plan Room. General Contract Bidders shall verify that each subcontract bidder is informed of all Addenda at the time sub-bid information is received. All Addenda become part of the Contract Documents. Include resultant costs in the Bid Sum.

C. If any bidder is in doubt as to the true meaning, spirit, and intent of the Drawings, Project Manual or any part of the Contract Documents, bidder may request an interpretation. Any interpretation of Contract Documents, if made, will be by addendum only. The Owner and the Architect/Engineer are not responsible for any other explanations or interpretations made prior to closing time for receipt of bids. No explanations or interpretations made orally will be considered binding.

D. Clarification requests from Bidders must be made in writing not less than 7 calendar days before date set for receipt of Bids. The reply will be in the form of an Addendum.

E. Figures given on the Drawings govern scale measurements. Discrepancies shall be brought to the attention of the Architect/Engineer for interpretation and the Architect/Engineer's decision, in writing, shall govern.

F. If the Drawings and Project Manual disagree in themselves or with each other, estimate on and furnish the greater quantity or better quality unless otherwise instructed in writing by the Architect/Engineer.

G. Color selections for any product will be selected (by the Architect) from a full range of all standard and premium colors and shall not be limited in the number of different colors selected, unless specifically indicated otherwise in the specification sections for each product. The Contractor is required to submit a full range of product samples for the Architect's selection.

1.06 PRODUCT/SYSTEM SUBSTITUTIONS

A. Refer to Section 01600.

B. The Architect/Engineer will consider substitutions up to 10 days before receipt of Bids.

C. Bidders shall include in their Bid any change in the Work, in the Contract Time and in the Contract Sum required to use substitute materials, products, and equipment. A later claim by the Bidder for an addition to the Contract Time or Contract Sum because of changes in Work necessitated by use of substitute materials, products, and equipment shall not be considered.

D. The Architect/Engineer will issue an Addendum for accepted substitute materials, products, and equipment to the plan rooms, known general contract bidders, and known subcontractors and suppliers including those requesting substitutions.

1.07 BASIS OF BID

A. The intent of this Bid request is to obtain a stipulated sum offer to perform Work to complete construction for the Project of these documents.

1.08 PREPARATION OF BIDS

A. Bids shall be submitted on forms identical to the form included with the Bid Documents.

B. Fill out Bid Form completely, type or print date of submission, organization's name and mailing address.

C. Where so indicated by the makeup of the Bid Form, sums shall be expressed in both words and figures, and in case of discrepancy between the two, the amount written in words shall govern.

D. Indicate in United States currency dollar amounts the stipulated sum.

E. Indicate in United States currency dollar amounts the alternate amounts. For Alternate bid amounts to add to the base Bid, blacken out the word deduct so that only ADD remains readable. For alternate bid amounts to deduct from the base bid, blacken out the word add so that only the word DEDUCT remains readable. Refer to Section 01019 – Contact Considerations for description of Alternate items.

F. Indicate in Untied States currency dollar amounts the unit pricing amounts. Unit prices are to assist in determining cost of changes to Work and for future Work. Unit pricing shall not be considered a portion of the Work indicated in the Contract Documents and shall not affect the stipulated sum Bid. Indicate in the unit column the price for a single unit, and in the total price column indicate the total cost based on the estimated quantity. Refer to Section 01026 – Unit Prices and Drawings for additional information on unit price items.

G. Indicate the number of calendar days required from notice to proceed until date of substantial completion. This should be carefully estimated according to present-day deliveries and conditions, in order that no extension of time will be necessary. The construction period is subject to review and approval by the Owner.

H. Indicate the percent for overhead and profit combined which will be added to material and labor cost and included in the total cost to the Owner for changes in the Work. Refer to Document 00800 – Supplementary Conditions for limits on the percent of combined overhead and profit for changes in the Work.

I. Record Addenda numerically and indicate the date for each.

J. The Bid Form shall be signed and sealed by the Bidder, as follows:

1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature.

2. Partnership: Signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature.

3. Corporation: Signature of a duly authorized signing officer(s) in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. If the Bid is signed by officials other than the President and Secretary of the company, or the President/Secretary/Treasurer of the company, a copy of the by-law resolution of the Board of Directors authorizing them to do so, must also be submitted with the Bid Form in the Bid envelope.

4. Joint Venture: Each party of the joint venture shall execute the Bid Form in a manner appropriate to such party as described above, similar to the requirements of a Partnership.

K. The signer of the Bid must initial alterations and erasures.

L. The Bidder shall make no additional stipulations on the bid form nor qualify the Bid in any other manner.

M. Fill out, sign and seal the Supplements to Bid Form.

N. Submit two (2) copies of the executed offer on the Bid Form provided and the Supplement to Bid Form.

O. Include bid security deposit and agreement to provide construction performance and payment bond in the envelope with the bid forms and supplements.

P. By submitting a bid, the bidder is acknowledging that there will be no contractual relationship between the Owner and bidder until both parties have formally approved and signed the AIA Document A101, AIA Document A201, and Document 00800 Supplementary Conditions.

1.09 REQUIREMENTS FOR BID SECURITY

A. Bids shall be accompanied by a security deposit in the form of a Bid Bond, certified check, or cashiers check in the amount of a sum no less than 5 percent of the Bid Sum for a duration of 90 days.

B. The Bidder shall endorse the Bid Bond in the name of the Owner as obligee, signed and sealed by the Bidder as principal and the Surety.

C. The Surety Company writing the Bid Bond must be listed in the Federal Register as published by the U.S. Department of Treasury, in the most recently revised Circular 570. In addition, the Surety Company must be licensed and admitted to do business in the State of Michigan. The Bidder shall provide the Owner with evidence that the Surety Company is listed in the current U.S. Department of Treasury Circular 570 and is licensed and admitted to do business in the State of Michigan.

D. After a Bid has been accepted, securities will be returned to all respective unsuccessful Bidders.

E. The security deposit of successful bidder will be returned after signing of the Owner-Contractor Agreement. If bidder is unable to execute the Agreement, the bidder's security shall be forfeited.

F. If no contract is awarded, all security deposits will be returned within ten days after the expiration of offer duration period of 90 days.

1.10 REQUIREMENTS FOR CONSTRUCTION PERFORMANCE BOND AND CONSTRUCTION PAYMENT BOND

A. Submit with the Bid an Agreement that if awarded the contract, Bidder will provide in addition to the required Bid Bond a Construction Performance Bond and Construction Payment Bond, which meet the following requirements.

B. The accepted Bidder shall provide a Construction Performance Bond by a surety company satisfactory to the Owner, in an amount equal to one hundred percent (100%) of the total sum of the contract as security for faithful performance of the contract.

C. The accepted Bidder shall provide a Construction Payment Bond by a surety company satisfactory to the Owner, in an amount equal to one hundred percent (100%) of the total sum of the contract as security for the payment of all persons performing labor and/or furnishing materials.

D. The Bidder shall endorse the Construction Performance Bond and Construction Payment Bond in the name of the Owner as obligee, signed and sealed by the Bidder as principal and the Surety.

E. The Surety Company writing the Performance and Payment Bonds must be listed in the Federal Register as published by the U.S. Department of Treasury, in the most recently revised Circular 570. In addition, the Surety Company must be licensed and admitted to do business in the State of Michigan. The Bidder shall provide the Owner with evidence that the Surety Company is listed in the current U.S. Department of Treasury Circular 570 and is licensed and admitted to do business in the State of Michigan.

F. Construction Performance Bond and Construction Payment Bond shall be held until time of substantial completion, receipt by the Owner of all required certifications and occupancy approvals from authorities having jurisdiction over the work, and acceptance of the Project by the Owner.

1.11 ADDITIONAL CONTRACTOR INFORMATION

A. The selected Bidders shall submit a detailed cost or pricing breakdown by trades and/or suppliers within 10 calendar days of receipt of notice of acceptance and prior to execution of agreement.

B. Food Service Equipment. Line by line pricing form shall be submitted from food service contractor.

1.12 IDENTIFICATION AND SUBMISSION OF BIDS

A. Submit two (2) copies of the executed offer on the Bid Forms provided, signed with the required security in a closed opaque envelope, clearly identified on the outside of the envelope:

Project name: Tuscola County Jail, C-Block Shower Addition.
Owner's name: Tuscola County
Bidder's name:

B. Bidders shall be solely responsible for the delivery of their Bids in the manner and time prescribed.

C. Bids signed, executed, and dated will be received by:

Tuscola County
125 W Lincoln Street
Caro, MI 48723
Attn Mike Miller, Building and Grounds Director

Before 4:30 p.m. local time on Tuesday July 31, 2012

D. Offers submitted after the above time will be returned to the Bidder unopened.

1.13 MODIFICATION OR WITHDRAWAL OF BIDS

A. Bid changes or withdrawal shall be permitted until the time of the bid opening without penalty.

B. Amendments to the submitted offer will be permitted and will require a written request for modification or withdrawal endorsed by the same party or parties who signed the offer. One copy of request shall be submitted to each the Owner and to the Architect/Engineer.

1.14 DISQUALIFICATION OF BIDDERS

Bids that are unsigned, improperly signed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, will at the discretion of the Owner, be declared unacceptable.

A. Bid Forms, Appendices, and enclosures which are improperly prepared will at the discretion of the Owner, be declared unacceptable.

B. Failure to provide security deposit, bonding or insurance requirements will at the discretion of the Owner invalidate the Bid.

C. Improperly completed information, irregularities in bid bond, and/or failure to provide agreement to bond may be cause the Bid invalid.

1.17 EVALUATION AND CONSIDERATION OF BIDS

A. Owner reserves time to tabulate, review, and evaluate the bids.

B. The Owner reserves the right to reject any and all bids, to award the agreement to other than the low bid, when it is determined to be in the Owner's interest to do so, to award separate agreements for separate parts of the services required, to negotiate the terms and conditions of all and any part of the bids, to waive irregularities and/or formalities, and in general to make award in the manner as determined to be in the County's best interest at its sole discretion.

C. By submitting a bid, the bidder is acknowledging that there will be no contractual relationship between the Owner and bidder until both parties have formally approved and signed the AIA Document A101, AIA Document A201, and Document 00800 Supplementary Conditions.

D. Considerations or factors that are important to the Project are as follows:

1. Amount of the bid, however, low bid alone will not necessitate award.

2. Contract time.

3. Percent of overhead and fee combined for changes in the work by change orders.

4. Experience and qualifications in completing projects of similar type, size, and scope.

5. References.

E. After acceptance by the Owner, the Owner will issue to the successful Bidder, a written Bid Acceptance or Notice to Proceed. The successful Bidder shall commence work within ten calendar days after Notice to Proceed is issued.

1.18 EXECUTION OF CONTRACT

A. The Owner reserves the right to make changes to AIA Document A101 – Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum (1987 Edition), AIA Document A201 – General Conditions of the Contract for Construction (1987 Edition), and Document 00800 Supplementary Conditions up until the time they are presented for execution by the parties.

B. Contractors shall commence work within ten calendar days after the Owner shall have given his written notice to commence construction, and shall diligently prosecute such construction.

END OF DOCUMENT

DOCUMENT 00200
INFORMATION AVAILABLE TO BIDDERS

1.01 SUMMARY

A. Documents contained within this Section are information made available to the Architect/Engineer for purposes of design. The Documents were prepared by others. The Architect/Engineer does not warrant the accuracy or completeness of the Documents.

B. Additional Documents listed in this Section are indicated for the Contractor's consideration and the information may be requested by the General Contractor.

1.02 INFORMATION FROM THE ARCHITECT

A. Existing Drawings:

1. No representation as to the accuracy of the existing drawings is offered. Bidders are to use their own judgment and field inspection.

END OF DOCUMENT

DOCUMENT 00300

BID FORM – GENERAL CONTRACTOR

To: Tuscola County
125 W Lincoln Street
Caro, MI 48723

Project: Tuscola County Jail, Shower Addition

Date: _____

Submitted by: _____
(full name)

_____

_____
(full address)

1. OFFER

Having examined the place of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Landmark Design Group, P.C., Architect/Engineer for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Stipulated Sum of:

_____ dollars

($ _____)

We have included herewith, the required bid security deposit and agreement to provide construction performance and payment bond as required by the Instruction to Bidders.

All applicable federal, state, and local taxes are included in this Bid Sum.

2. ALTERNATIVES

Alternate No 1A – Seamless Paint System in lieu of ceramic tile – new showers

Add/Deduct _____ dollars

Alternate No. 1B – Seamless Paint System – existing showers

Add/Deduct _____ dollars

Alternate No 2 – Remove and replace shower controls at existing showers

Add/Deduct _____ dollars

3. ACCEPTANCE

This offer shall be open to acceptance and is irrevocable for the period stated in the advertisement for bid from the bid closing date.

By submitting a bid, the bidder is acknowledging that there will be no contractual relationship between the Owner and bidder until both parties have formally approved and signed the AIA Document A101, AIA Document A201, and Document 00800 Supplementary Conditions.

If the Owner accepts this Bid within the time period stated above, we will:

1. Execute the Agreement within ten days of receipt of Notice of Award.

2. Furnish the required bonds within ten days of receipt of Notice of Award in the form described in the Instructions to Bidders.

3. Commence work within ten calendar days after written Notice to Proceed.

If this Bid is accepted within the time stated, and we fail to execute the agreement or we fail to provide the required Bonds, the security deposit shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this Bid and the Bid upon which the Contract is signed.

In the event our Bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period.

4. CONTRACT TIME

If this Bid is accepted, we will:

Complete the Work within _____ calendar days of notice to proceed.

5. CHANGES IN THE WORK

The percent of _____for overhead and fee combined will be added to material and labor cost for changes in the work by change orders.

6. ADDENDA

The following Addenda have been received. The modifications to the Bid Documents noted therein have been considered and all costs thereto are included in the Bid Sum.

Addendum # _____ Dated _____

Addendum # _____ Dated _____

Addendum # _____ Dated _____

7. APPENDICES

Submit Supplements to Bid Form with submission of this Bid for additional Bid information.

8. BID FORM SIGNATURE(S)

_____
(Bidder - please print the full name of your Proprietorship, Partnership, or Corporation)

_____
(Authorized signing officer Title)

_____
(Authorized signing officer Title)

_____
(Witness)

If the Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

END OF DOCUMENT

DOCUMENT 00500
AGREEMENT

1. AGREEMENT

American Institute of Architects (AIA) Document A101, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum (1987 Twelfth Edition), forms the basis of Contract between the Owner and Contractor. All provisions, which are not so amended or supplemented, remain in full force and effect.

2. SUPPLEMENTARY CONDITIONS

Refer to Document 00800 for amendments to this portion of the Agreement.

The Owner reserves the right to make changes to these documents up until the time they are presented for execution by the parties.

END OF AGREEMENT

DOCUMENT 00700
GENERAL CONDITIONS

1. GENERAL CONDITIONS

American Institute of Architects (AIA) Document A201, General Conditions of the Contract for Construction (1987 Fourteenth Edition), Articles 1 through 14 inclusive, is the General Conditions between the Owner and Contractor.

2. SUPPLEMENTARY CONDITIONS

Refer to Document 00800 for amendments to these General Conditions.

The Owner reserves the right to make changes to these documents up until the time they are presented for execution by the parties.

END OF GENERAL CONDITIONS

DOCUMENT 00800
SUPPLEMENTARY CONDITIONS

The following supplements modify, change, delete from, or add to the Master Agreement, AIA Document A101, and General Conditions for the Contract for Construction, AIA document A201. Where any article or any paragraph, subparagraph or clause thereof is not modified or deleted, unaltered provisions of that article, paragraph, subparagraph or clause remain in effect.

The terms used in the Supplementary Conditions, which are defined in the General Conditions of the Contract for Construction (AIA Document A201 – 1987 Fourteenth Edition), have the meanings assigned to them in the General Conditions.

AIA DOCUMENT A201 SUPPLEMENTS

AMEND ARTICLE 1 AS FOLLOWS:

Add Subparagraphs to 1.1:

1.1.1.1 Division 1 – General Requirements governs the execution of all sections of the Specifications from Division 2 through Division 16.

1.1.8 MISCELLANEOUS DEFINITIONS

1.1.8.1 The term "product" includes materials, systems and equipment.

1.1.8.2 The term "Project Manual" includes the bidding requirements, Conditions of the Contract and the Specifications.

Revise Subparagraph 1.2.3:

Add to the end of first sentence: "and to make all working parts operational."

Add to the end of the paragraph: "Should conflicts, errors, or discrepancies remain unresolved within the final ten (10) days before bids are due, estimate on and furnish the greater quantity or better quality unless resolution is received in writing from the Architect/Engineer."

Add Subparagraph 1.2.3.1:

1.2.3.1 Should there be conflicts, errors, or discrepancies between or within the Contract Documents, that which requires the highest degree of performance (quality, quantity, strength, finish, completion, complexity, sophistication, etc.), will be required and shall be provided at no increase in the contract amount. All such conflicts shall be brought to the attention of the Architect/Engineer for their interpretation of the intent of the drawings and/or specifications.

AMEND ARTICLE 2 AS FOLLOWS:

Delete Subparagraph 2.1.2.

2.3.1. Delete the word "persistently" in the first sentence of Article 2.3.1. In addition, insert at the end of Article 2.3.1 the following:

"This right shall be in addition to, and not in restriction of, the Owner's rights under Article 12.2."

Revise Subparagraph 2.4.1:

2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Architect's additional services and expenses made necessary by such default, neglect or failure and legal fees. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

AMEND ARTICLE 3 AS FOLLOW:

Revise Subparagraphs to 3.2.3:

Substitute "reviewed" in lieu of the work "approved."

Revise Subparagraph 3.3.2:

3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors, Subcontractors and their respective agents and employees, and other persons performing portions of the Work under a contact with the Contractor, a Subcontractor or a Subsubcontractor.

AMEND ARTICLE 3 AS FOLLOWS:

Revise Subparagraph 3.2.3:

Substitute "reviewed" in lieu of the work "approved."

3.3.5 Add the following provision as a new Article 3.3.5:

"If any of the Work is required to be inspected or approved by any public authority, the Contractor shall cause such inspection or approval to be performed. No inspection performed or failed to be performed by the Owner hereunder shall be a waiver of any of the Contractor's obligations hereunder or be construed as an approval or acceptance of the Work or any part thereof."

3.3.6 Add the following provision as a new Article 3.3.6:

"The Contractor acknowledges that it is the Contractor's responsibility to hire all personnel for the proper and diligent prosecution of the Work and the Contractor shall use its best efforts to maintain labor peace for the duration of the Project. In the event of a labor dispute, the Contractor shall not be entitled to any increase in the Contract Sum."

Add Subparagraph 3.4.3:

3.4.3 POLICIES OF EMPLOYMENT

3.4.3.1 The Contractor shall maintain policies of employment as follows:

3.4.3.2 The Contractor and all Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, age, sex, or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, color, age, sex or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

3.4.3.3 The Contractor and all Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, age, sex, or national origin.

3.4.3.4 The Contractor or his collective bargaining representative will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice advising the said labor union or worker's representative of the Contractor's commitments under this section.

Revise Subparagraph 3.6.1:

Add to the end of the paragraph: "including, but not limited to, all Sales Taxes, Use Taxes, Occupational Taxes, Excise Taxes, Social Security Benefits, Unemployment Compensation Taxes, or similar levies on all materials, labor, tools, and equipment furnished under this Agreement, as required by the Statutes of the State in which the project is located.

"(a) The Contractor's fee includes, and the Contractor shall be solely responsible for paying, any and all taxes, excises, duties and assessments ("Taxes") arising out of the Contractor's performance of the Work in any manner levied, assessed or imposed by any government or agency having jurisdiction.

(b) The Contractor shall promptly pay and discharge when due, unless the validity or application to the Work is being contested in good faith, any and all Taxes, together with any interest and penalties, the responsibility and liability for which is assumed by the Contractor pursuant to the preceding paragraph. If any such Taxes are levied, assessed or imposed upon the Owner, the Owner shall notify the Contractor and the Contractor shall promptly pay and discharge the Taxes, but upon the written request and at the expense of the Contractor, the Owner shall assist the Contractor in contesting the validity or application of such Taxes. If the Owner receives a refund of all or any part of the Taxes (including a refund of interest or penalties), the amount refunded to the Owner shall promptly be remitted to the Contractor, less any expenses of the Owner associated with contesting the Taxes not previously reimbursed by the Contractor to the Owner."

3.7.1. Add the following language at the end of Article 3.7.1:

“The Contractor shall procure all certificates of inspection, use, occupancy, permits and licenses, pay all charges and fees and give all notices necessary and incidental to the Work. Certificates of inspection, use and occupancy shall be delivered to the Owner upon completion of the Work in sufficient time for occupation of the project in accordance with the approved schedule for the Work. ”

Revise Subparagraph 3.7.2:

Add to end of paragraph: "If the Contractor fails to give such notices, it shall be liable for and shall indemnify and hold harmless the Owner and the Architect, and their respective employees, officers and agents, against any resulting fines, penalties, judgments or damages, including reasonable attorneys' fees, imposed on or incurred by the parties indemnified hereunder."

3.7.3. Delete Article 3.7.3 and substitute the following in lieu thereof:

"It shall be the obligation of the Contractor to review to the best of its ability the Contract Documents to determine and to notify the Owner and the Architect of any discrepancy between building codes and regulations of which the Contractor has knowledge. The Contractor shall not violate any zoning, setback or other local requirements of applicable laws, codes and ordinances, or of any recorded covenants of which the Contractor has knowledge. If the Contractor observes that portions of the Contract Documents are at variance with applicable laws, statutes, ordinances, building codes, rules or regulations, the Contractor promptly shall notify the Owner and Architect in writing, and necessary changes shall be accomplished by appropriate Modification."

Add Subparagraphs to 3.7:

3.7.5 The General Contractor shall submit plans and Specifications to the Office of the Building Inspector and/or any other department having jurisdiction over work of this character and shall obtain and pay for examination fees, general building permits, and any other fees required by said departments. Unless otherwise specified, he shall also make all cash deposits required by State, County, or City authorities and pay for repairing of all walks, pavements, roadways, lawns, shrubs, trees, structures and utilities damaged by execution of his work.

The Electrical Contractor shall procure all necessary permits and certificates, pay for all fees, and arrange for all necessary inspections required by State, County, or City authorities for all electrical work, meters, lighting fixtures, and other electrical items and pay for repairing of all walks, pavements, roadways, lawns, shrubs, trees, structures and utilities damaged by execution of his work.

The Site Preparation, Plumbing, Heating, Air Conditioning, and Ventilating Contractors shall procure all necessary permits and certificates, pay all fees, and arrange for all necessary inspections required by State, County, or City authorities and pay for repairing of all walks, pavements, roadways, lawns, shrubs, trees, structures and utilities damaged by execution of their respective work.

Revise Subparagraph 3.9.1:

Revise first and second sentences to read: "The Contractor shall employ and maintain a competent superintendent and necessary assistants approved by the Architect/Engineer and Owner throughout the period of construction. The superintendent shall be deemed an Agent of the Contractor and any orders given him by the Architect/Engineer shall be binding upon the Contractor."

Add to the end of the paragraph: "The superintendent of the Contractor may not be removed from (or replaced on) the job during the period of construction without approval of the Architect/Engineer and Owner."

3.9.1. Add the following language at the end of Article 3.9.1:

"The superintendent shall be satisfactory to the Owner in all respects, and Owner shall have the right to require Contractor to dismiss from the Project any superintendent whose performance is not satisfactory to Owner, and to replace such superintendent with a superintendent satisfactory to Owner. The Contractor shall not replace the superintendent without the consent of the Owner except with another superintendent satisfactory to the Owner in all respects."

Add Subparagraph 3.9.2:

3.9.2 "As directed by the Architect / Engineer, there is to be held at his field office a meeting of the representatives of the various trades engaged about the Work, for furthering the progress of the Work and given of clarifications by the Architect and Instructions by the Owner. Where the Contractor's Representatives fail in attendance or in executing the instructions given them, they shall on request of the Owner be dismissed from the Work and other representatives must be immediately substituted."

3.9.2. Add the following provision as a new Article 3.9.2:

"A list of all supervisory personnel, including the project manager and superintendent, that the Contractor intends to use on the Project and a chain-of-command organizational chart shall be submitted to the Owner for approval. The Contractor shall not engage supervisory personnel or utilize an organization and chain-of-command other than as approved by Owner in writing, and shall not change such personnel or form of organization without the written approval of the Owner."

3.10.1. Delete Article 3.10.1 and substitute in lieu thereof the following:

"The Project construction schedule shall not exceed time limits current under the Contract Documents, shall be updated and revised by the Contractor at appropriate intervals as required by the conditions of the Work and Project, shall be related to the Project scope as defined by the Contract Documents, shall provide for expeditious and practicable execution of the Work of this Contract and shall not be modified or extended without the prior approval of the Owner in each instance."

Revise Subparagraph 3.11.1:

In the first sentence, replace "and approved Shop Drawings, Product Data and Samples with the following: "and Contractor approved Shop Drawings, Product Data and Samples which have been reviewed by the Architect/Engineer."

3.11.1 Insert immediately after the word "Work" in the last sentence of Article 3.11.1 the following:

"Signed by the Contractor, certifying that they show complete "as-built" conditions, stating sizes, kind of materials, vital piping, conduit locations and similar matters."

Revise Subparagraphs to 3.12:

Add new sentence to the end of 3.12.5: Contractor shall indicate his review and approval by means of his stamp, with his initials and date of review, prior to submitting to the Architect/Engineer for review.

3.12.4. Delete the last sentence of Article 3.12.4 in its entirety.

3.12.5. Delete the last sentence of Article 3.12.5 in its entirety

Revise 3.12.6 to read as follows:

"No portion of the work requiring submission of a Shop Drawing, Product Data or Sample shall be commenced until the submittal has been reviewed by the Architect/Engineer as provided in Subparagraph 4.2.7. All such portions of the Work shall be in accordance with submittal reviewed by the Architect/Engineer, and bearing his review stamp."

Revise 3.12.8 to read as follows:

The Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's review of Shop Drawings, Product Data, Samples or similar submittal unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in the Shop Drawings, Product Data, Samples or similar submittal by the Architect's review thereof.

Add Subparagraph 3.12.12:

3.12.12 Shop drawings, which in the opinion of the Architect/Engineer have not been fully checked by the Contractor, will not be reviewed by the Architect/Engineer. They will be returned for proper checking by the Contractor. No extension of Contractor completion date will be allowed because of such action by the Architect/Engineer.

Revise Subparagraph 3.15.1:

3.15.1 It shall be the duty of the General Contractor and/or Subcontractor to keep the premises free of accumulations of surplus materials and rubbish caused by his operations and the operations of its subcontractors. Combustible rubbish and debris shall be removed immediately.

Add new Subparagraphs:

3.15.1.1 Each Friday afternoon, and more often if necessary, the General Contractor shall perform an overall cleanup of the entire site, including a broom cleaning of all appropriate surfaces. The trades shall remove their rubbish and debris from the building site to the rubbish collection location promptly upon its accumulation and in no event later than the regular Friday general clean up.

3.15.1.2 Burning of rubbish on site will not be permitted. Rubbish shall not be thrown through window openings or from any great heights, but shall be conducted to ground by means of approved chutes or other means of controlled conveyance.

3.15.1.3 The General Contractor shall provide a suitable location on the site with a sufficient quantity of rubbish bins, and shall be responsible for the removal of rubbish from the site.

3.15.1.4 If the Contractor fails to clean up, the Owner may do so, and the cost thereof shall be deducted from monies owed the Contractor.

Revise Subparagraph 3.18.1:

3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect’s consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys’ fees, arising out of or resulting from performance of the Work, to the extent caused in whole or in part by negligent acts or omissions of the Contractor, a Subcontractor, anyone directly

or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph 3.18.

Revise Subparagraph 3.18.3:

Change the word "approval" to the word "review."

Add Subparagraph 3.18.4:

3.18.4 "The Contractor agrees to indemnify, defend and hold harmless the Owner from and against any and all administrative and judicial actions (including reasonable attorneys' fees related to any such actions) and judgments incurred by the Owner in connection with any labor related activity arising from the Contractor's performance of the Work. As used in these Contract Documents, "labor related activity" includes, but is not limited to, strikes, walk-outs, informational or organizational picketing, use of placards, distribution of hand-outs, leaflets or other similar acts at or in the vicinity of the Project or in the vicinity of any other facility where the Owner conducts business. The Owner shall advise the Contractor if any labor related activity occurs and the Contractor shall arrange for the legal representation necessary to protect the Owner's interest, provided such representation is approved by the Owner in advance."

3.18.5 The Contractor shall indemnify, defend and hold harmless the Owner and the Architect, and their consultants, agents and employees, from and against claims, damages, losses, attorney's fees, and expenses arising out of, or resulting from, any breach, violation or infringement of patent rights, copyrights or other intellectual property rights in connection with the Work, and from any release of hazardous substances on or near the site, except to the extent caused by the Owner.

AMEND ARTICLE 4 AS FOLLOWS:

Add to Subparagraph 4.1.1:

The Architect is Landmark Design Group, P.C., 3900 Linden Avenue, SE, Suite C, Grand Rapids, Michigan 49548-3406; telephone (616) 956-0606, and is referred to throughout the Specifications as the A/E or Architect/Engineer and as Architect in AIA Document A101, AIA Document A201 and amendments and supplementary conditions to those documents.

Add to the end of Subparagraph 4.3.6:

"Contractor may not make a claim for additional costs or time because of a physical condition unless it has complied with the notice provisions hereof."

4.5. Delete Article 4.5 in its entirety.

4.9 DISPUTE RESOLUTION

4.9.1. Controversies and Claim Subject to Litigation. Any controversy or Claim arising out of or related the Contract, or the breach thereof shall be settled by a court of competent jurisdiction, unless otherwise agreed by the parties in writing.

4.9.2 Mediation Prior to Litigation. Except for injunctive relief, any claim, dispute or other matter in question arising out of or related to this Agreement shall be subject to mediation as a condition precedent to the institution of legal or equitable proceedings if requested by either party. If mutually agreed to in writing, the mediation shall be conducted by the American Arbitration Association in accordance with its Construction Industry Mediation Rules currently in effect. Request for mediation shall be filed in writing with the other party to this Agreement and with the American Arbitration Association. Mediation shall proceed in advance of legal or equitable proceedings, which shall be stayed pending mediation for a period of sixty (60) days from the date of filing, unless stayed for a longer period by agreement of the parties. The parties shall share the mediator's fee and any filing fees equally.

4.9.3 Continuing Performance. Notwithstanding any litigation, the parties in dispute shall continue to fulfill their responsibilities under the Contract."

AMEND ARTICLE 5 AS FOLLOWS:

5.2.1. Add the following at the end of Article 5.2.1:

"Notwithstanding the foregoing, Contractor may not substitute any Subcontractor for any of the subcontractors previously identified in the bid process without the express written consent of Owner."

5.2.4. Add the following sentence at the end of Article 5.2.4:

"The Owner may require the Contractor to change any Subcontractor or Sub-subcontractor previously approved and, if at such time the Contractor is not in default hereunder, the Contract Sum shall be increased or decreased by the difference in cost occasioned by such change. The Owner shall document in writing the reasons for which this change is being made and will hold the Contractor harmless from any claim of the subcontractor arising solely from the Owner's requirement to change the subcontractor."

Add Subparagraph 5.2.5:

5.2.5 "Upon request, the Contractor shall provide to the Owner an executed copy of all subcontracts, purchase orders and other agreements relating to the Work."

5.3.2. Add the following new Article 5.3.2:

"Notwithstanding any provision of Article 5.3.1, any part of the Work performed for the Contractor by a Subcontractor or its Sub-subcontractor shall be pursuant to a written Subcontract between the Contractor and such Subcontractor (or the Subcontractor and its Sub-subcontractor at any tier), which shall be prepared on a form of subcontract satisfactory to the Owner in all respects. Each such subcontract shall, where the context so requires, contain provisions that:

.1 Require that such Work be performed in accordance with the requirements of the Contract Documents;

.2 Waive all rights the contracting parties may have against one another or that the Subcontractor may have against the Owner for damages caused by fire or other perils covered by the insurance described in the Contract Documents;

.3 Require the Subcontractor to carry and maintain insurance coverage in accordance with the Contract Documents, and to file certificates of such coverage with the Contractor;

.4 Require the Subcontractor to submit certificates and waivers of liens for work completed by it and by its Sub-subcontractors as a condition to the disbursement of the progress payment next due and owing;

.5 Require submission to Contractor or Subcontractor, as the case may be, of applications for payment in a form approved by the Owner, together who clearly defined invoices and billings supporting all such applications under each subcontract to which the Contractor is a party;

.6 Report, so far as practicable, unit prices and any other feasible formula for use in the determination of costs of changes in the Work;

.7 Require each Subcontractor to furnish to the Contractor in a timely fashion all information necessary for the preparation and submission of the reports required herein;

.8 Require that each Subcontractor continue to perform under its subcontract in the event the Contract is terminated and the Owner shall take an assignment of said subcontract and request such Subcontractor to continue such performance;

.9 Require each Subcontractor to remove all debris created by its activities; and

.10 Require each Subcontractor to represent that it is an equal opportunity employer."

5.3.3 Add the following provision as a new Article 5.3.3:

"The Contractor shall not enter into any subcontract, contract, agreement, purchase order or other arrangement ("Arrangement") for the furnishing of any portion of the materials, services, equipment or Work with any party or entity without the approval of the Owner."

AMEND ARTICLE 6 AS FOLLOWS:

Delete Subparagraph 6.1.4.

AMEND ARTICLE 7 AS FOLLOWS:

Revise Subparagraph 7.1.3:

7.1.3 Except as permitted in Paragraph 7.3 and 9.7.2, a change in the Contract sum or the Contract Time shall be accomplished only by change order. Accordingly, no course of conduct or dealings between the parties nor express or implied acceptance of alterations or additions to the work and no claim if the Owner has been unjustly enriched by an alteration or addition to the work, whether or not there is, in fact, any unjust enrichment to the work, shall be the basis of any claim to an increase of any amounts due under the contract documents or a change in any time period provided for in the Contract documents.

Add the following paragraph to Article 7:

7.3.10 Add the following provision as a new Article 7.3.10:

"When either the Owner or the Contractor or both do not agree with the determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, such disagreement may be resolved by agreed upon arbitration or, in the absence of agreement, litigation as described in Article 4.3."

7.4 Contractor shall indemnify, defend and hold Owner harmless from and against any and all claims, losses, damages, and causes of action, including any judgements which may be entered against it, arising out of or in connection with the performance of Contractor's services in connection with the Project. The Owner shall notify the Contractor, in writing, of any such action, as it deems necessary and appropriate to defend the Contractor's interests.

7.5 OVERHEAD AND PROFIT LIMITS

7.5 Contractor shall provide its services under this Agreement in a timely fashion and on a schedule that will allow Substantial Completion of all portions of the Project on or before the agreed upon date in the Project Schedule, and final completion of the Project on or before the agreed upon date in the Project Schedule. The parties agree that time is of the essence. The parties may mutually agree in writing to extend one or both of these dates.

7.5.1 For changes in the Work, the maximum allowable cost for the combined overhead and profit included in the total cost to the Owner shall not exceed 15 percent and shall be subject to the following maximums:

.1 For the Contractor, for Work performed by the Contractor's own forces, 15 percent of the cost.

.2 For the Contractor, for Work performed by the Contractor's Subcontractor, 5 percent of the amount due the Subcontractor.

.3 For each Subcontractor involved, for Work performed by that Subcontractor's own forces, 10 percent of the cost.

.4 For each Subcontractor involved, for Work performed by the Subcontractor's Sub-subcontractors, 5 percent of the amount due the Sub-subcontractor.

.5 For each Sub-subcontractor involved, for Work performed by the Sub-subcontractors own forces, 5 percent of the cost.

.6 All proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor and materials shall be itemized, and where major cost items are Subcontracts, they shall be itemized also. In no case will a change be approved without such itemization.

7.6 Notwithstanding the paragraph immediately following Paragraph 1.05 in Section 01035 of the Project Manual, which is hereby voided, Contractor shall not be paid for work performed prior to the issuance of an applicable change order. Verbal approval of a change order is not permitted, and any work performed on the basis of purported verbal approval shall not be compensated except in the case of a documented emergency.

AMEND ARTICLE 8 AS FOLLOWS:

8.3.1 Add the following sentence at the end of Article 8.3.1:

"No such Change Order extending the Contract Time shall result in any increased payments to the Contractor for overhead or extended overhead; nor shall such Change Order result in any increased payments to the Contractor for any other amounts of any nature except if

actual additional expenses are shown or if the scope and character of the Work is significantly changed."

8.3.2 Add the following sentence at the end of Article 8.3.2:

"A copy of any claim for extension shall be delivered to the Owner, and the Contractor shall immediately take all steps reasonably possible to lessen the adverse impact of such delay on Owner."

8.3.3 Add the following sentence at the end of Article 8.3.3:

"In no event shall Owner be liable for delay damages to the extent such delay was caused by or attributable to Contractor or any Subcontractor."

AMEND ARTICLE 9 AS FOLLOWS:

9.1.2 Add the following provision as new Article 9.1.2:

"Notwithstanding anything to the contrary contained in the Contract Documents, the Owner may withhold any payment to the Contractor hereunder if and for so long as the Contractor fails to perform any of its obligations hereunder or otherwise is in default under any of the Contract Documents; provided, however, that any such holdback shall be limited to an amount sufficient in the reasonable opinion of the Owner and the Architect to cure any such default or failure of performance by the Contractor."

Add to the end Subparagraph 9.3.1:

The form of Application for Payment shall be AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, supported by AIA Document G703, Continuation Sheet.

9.3.1 "Such Application for Payment shall be certified as correct by Contractor and shall be accompanied by waivers of liens and other documentation from Subcontractors and Sub-subcontractors as reasonably may be required by the Owner or title insurer. In addition, such Application for Payment shall contain a certification by the Contractor that there are no written claims submitted to the Contractor at the date of such Application for Payment."

Revise Subparagraph 9.3.3:

9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

9.4.2 Delete the words ", to the best of the Contractor and Architect's knowledge, information and belief," from the first sentence of Article 9.4.2, and insert in lieu thereof the work "the".

9.5.3 Add the following provision as a new Article 9.5.3:

"If the Contractor disputes any determination by the Architect with regard to any Certificate of Payment, the Contractor nevertheless expeditiously shall continue to prosecute the Work."

9.5.4 Add the following provision as a new Article 9.5.4:

"The Owner shall not be deemed to be in breach of this Contract by reason of the withholding of any payment pursuant to any provision of the Contract Documents provided the Architect has approved the Owner's action or the Work for which payment is being withheld shall have been rejected by any governmental authority."

9.7.2 Add the following provisions as a new Article 9.7.2:

"Notwithstanding Article 9.7.1, in the event there is a dispute about the accuracy or sufficiency of the Contractor's Application for Payment, Contractor shall not be entitled to stop the Work on account of failure of payment."

9.8.1 Insert after the words "Contract Documents" in Article 9.8.1 the words "and when all required occupancy permits, if any, have been issued".

9.8.2 Add the following provision at the end of Article 9.8.2:

"The Contractor is responsible for the warranty of all Work, whether performed by it or by its Subcontractors at any tier."

Add Subparagraph 9.8.4:

9.8.4 The completed Work shall be without any outstanding or concurrent Work remaining, except as required to complete minor punch list items. The Owner has the sole discretion to determine whether punch list items are "minor". Prerequisites for substantial completion include, (a) receipt by the Owner of all required operation and maintenance documentation, warranties, and completed record drawings; (b) receipt by the Owner of all required products, spare parts, maintenance and extra materials; (c) all systems have been successfully tested and demonstrated by the Contractor for their intended use; and (d) the Owner has received all required certifications and occupancy approvals from the state and local authorities having jurisdiction over the work. Receipt of all certificates and occupancy approvals in and of itself does not necessarily connote substantial completion.

Revise Subparagraph 9.10.2 to replace subclauses (2) and (3) thereof with the following:

"... (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled, modified or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents...."

Add new Paragraph 9.11:

9.11 RETENTION

9.11.1 Pursuant to Act 524 of the Michigan Public Acts of 1980, the following retention provisions shall apply: The Owner shall retain a portion of each progress payment otherwise due which shall be limited to the following.

a. Not more than 10% of the dollar value of all work in place until work is 50% in place.

b. After the work is 50% in place additional retainage shall not be withheld unless the Owner determines the contractor is not making satisfactory progress or for other specific cause relating to the contractor's performance under this contract.

9.11.2 The retained funds shall not be co-mingled with other funds of the Owner and shall be deposited in an interest-bearing account in a regulated financial institution in the State of Michigan wherein all retained funds are kept by the Owner which shall account for both retainage and interest on each construction contract separately.

9.11.3 Except as provided in subparagraphs 9.11.5 below, retainage and interest earned on retainage shall be released to the Contractor together with the final progress payment.

9.11.4 At any time after 94% of the work under this contract is in place and at the request of the original Contractor, the Owner shall release the retainage, plus interest to the original Contractor, only if the original Contractor provides to the Owner an irrevocable letter of credit in the amount of the retainage plus interest issued by a bank authorized to do business in the State of Michigan, containing terms mutually acceptable to the Contractor and the Owner.

9.11.5 If a dispute arises regarding the matter described in the paragraphs immediately above, the Contractor and the Owner agree to submit the dispute to the decision of an agent at the option of the Owner as follows:

a. The Contractor and the Owner shall designate an agent who has background training and experience in the construction of facilities similar to that which is the subject of the contract as follows:
   (1) In an agreement reached within ten (10) days after a dispute arises.
   (2) If an agreement cannot be reached within ten (10) days after a dispute arises the Owner shall designate an agent who has background training and experience in the construction of facilities similar to that which is the subject of the contract and who is not an employee of the Owner.

b. The Owner may request dispute resolution by the agent regarding the following:
   (1) At any time during the term of the contract, to determine whether there has been a delay for reasons that were within the control of the contractor, and the period of time that day has been caused, continued or aggravated by actions of the Contractor.
   (2) At any time after 94% of the work under the contract is in place, whether there has been an acceptable delay by the Contractor in performance of the remaining 6% of work under the contract. The agent shall consider the terms of the contract and the procedures normally followed in the industry and shall determine whether the delay was for failure to follow reasonable and prudent practices in the industry for completion of the project.

c. This dispute resolution process shall be used only for the purpose of determining the rights of the parties of retain funds and interest earned on retained funds and is not intended to alter, abrogate or limit any rights with respect to remedies that are available to enforce or compel performance of the terms of the contract by either party.

d. The agent may request and shall receive all pertinent information from the parties and shall provide an opportunity for an informal meeting to receive comments, documents and other relevant information in order to resolve the dispute. The agent shall determine the time, place and procedure for the informal meeting. A written decision and reasons for the decision shall be given to the parties within fourteen (14) days after the meeting.

e. The decision of the agent shall be final and binding upon all parties. Upon application of either party, the decision of the agent may be vacated by order of the Circuit Court only upon a finding by the Court that the decision was procured by fraud, duress or other illegal means.

f. If the dispute resolution results in a decision:
(1) That there has been a delay as described in subparagraph (b.1) above, all interest earned on the retained funds during the period of delay shall become the property of the Owner.
(2) That there has been an unacceptable delay as described in subparagraph (b.2) above, the Owner may contract with a subsequent Contractor to complete the remaining 6% of work under the contract, and interest earned on retained funds shall become the property of the Owner. A subsequent Contractor under this subdivision shall be paid by the Owner from the following sources until each source is depleted in the order listed below:
(i) The dollar value of the original contract less the dollar value of funds already paid to the original Contractor and the dollar value of the work in place for which the original Contractor has not received payment.
(ii) Retainage from the original Contractor or funds made available under a letter or credit provided in paragraph 9.11.4 above.
(iii) Interest earned on retainage from the original Contractor or funds made available under a letter of credit provided under paragraph 9.11.4 above.

g. If the Owner contracts with a subsequent Contractor as provided in subparagraph (f.2), the final progress payment shall be payable to the original Contractor as provided for in the General and Supplementary Conditions. The amount of the final progress payment to the original Contractor shall not include interest earned on retained funds. The Owner may deduct from the final payment all expenses of contracting with the subsequent Contractor. These provisions shall not impair the right of the Owner to bring an action or to otherwise enforce a performance bond to complete work under this construction contract.

9.11.6 The aforementioned retention provisions shall <u>not</u> apply if the dollar value of this contract is: (a) less than $30,000; or (b) if there will be three (3) or fewer payments.

9.11.7 Neither the final payment nor the remaining retained percentage shall become due until the Contractor submits to the Architect or the Owner (1) an affidavit that all payrolls, bills for materials and equipment and other indebtedness connected with the work for which the Owner might in any way be responsible, have been paid or otherwise satisfied, (2) consent of surety, if any, to final payment, and (3) if required by the Owner, other data establishing payment or satisfaction of all such obligations such as receipts, releases and waivers of liens arising out of the contract to the extent and in such form as may be designated by the Owner. If any subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond such lien. If any such lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all monies that the latter may be compelled to pay in discharging such lien, including all costs and reasonable attorney's fees.

9.11.8 The making of final payment shall constitute a waiver of all claims by the Owner except those arising from (1) unsettled liens, (2) faulty or defective work appearing after substantial completion, (3) failure of the work to comply with the requirements of the Contract Documents, or (4) terms of any special warranties required by the Contract Documents.

AMEND ARTICLE 10 AS FOLLOWS:

Revise Subparagraph 10.1.4:

10.1.4 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees arising out of or resulting from performance of the Work in the affected area if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property or death, or injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Owner, anyone directly or indirectly employed by the Owner or anyone for whose acts the Owner may be liable, and only to the extent not caused by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Subparagraph 10.1.4.

Add Subparagraph 10.2.8:

10.2.8 The Contractor shall notify the Owner and the Architect/Engineer in writing in advance of any hazardous chemical(s) and/or substance(s) that he brings onto the project site or within the existing facilities and shall state where, how, when and length of time said materials will be used.

Add Subparagraph 10.2.9:

10.2.9 Should any hazardous materials that were not anticipated be encountered during demolition or construction, the Contractor shall cease all work related to the hazardous materials. The Contractor shall then notify the Owner, who will determine the next course of action.

Add Subparagraph 10.2.10:

10.2.10 "If the Contractor fails to give such notices, or fails to comply with such laws, ordinances, rules, regulations and lawful orders, it shall be liable for and shall indemnify and hold harmless the Owner and the Architect, and their respective employees, officers and agents, against any resulting fines, penalties, judgments or damages, including reasonable attorneys' fees, imposed on or incurred by the parties indemnified hereunder."

AMEND ARTICLE 11 AS FOLLOWS:

Revise Subparagraph 11.1.2:

11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than the following limits of liability or required by law, whichever is greater:

a. Workmen's Compensation – Statutory

b. Public Liability

Including coverage for direct operations, sublet work, elevators, contractual liability and completed operations with limits not less than those listed below:

$ 5,000,000 per occurrence and aggregate for bodily injury and property damage.

The insurance shall be occurrence based rather than on claims made and shall name the Owner as and additional insured.

c. Comprehensive Automobile Liability

Provide coverage for all owned, non-owned, and hired vehicles. Coverage shall comply with Michigan No-Fault laws, and have minimum limits of liability of $ 5,000,000 per occurrence, combined single limit, for bodily injury and property damage.

d. The insurance required above in items b and c, shall name the Owner and Architect, and their respective officers, employees, agents and volunteers as additional insured.

Add to the end of Subparagraph 11.1.3:

"This Subparagraph 11.1.3 shall apply to all insurance required to be maintained by Contractor under the Contract Documents, and not apply to the insurance required under Paragraph 11.1. In addition, the insurance certificates shall be delivered along with a certificate from the agent for the insurer(s), including substantially the following:

This Certificate is being delivered in connection with the Contract between the County of Tuscola as Owner, and _____, as Contractor, relating to the Tuscola County Jail Renovation and Addition.

The undersigned has been engaged by the Contractor to arrange for the insurance coverage required under Article 11 of the General Conditions to the Contract Documents. Pursuant thereto, the undersigned is providing, concurrently with this Certificate, the certificate of insurance attached hereto, and hereby represents and warrants to the Owner that the undersigned has reviewed the insurance requirements set forth in Article 11 of the General Conditions, as supplemented and amended, and that the policies of insurance evidenced on the certificates of insurance attached hereto contain all of the coverage, limitations and other provisions required by the Contract Documents."

Delete Subparagraph 11.3.4.

Delete Subparagraph 11.3.9.

Revise Subparagraph 11.3.10:

11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers.

Revise Subparagraph 11.4.1:

11.4.1 The Contractor shall furnish satisfactory payment and performance bonds, each in the amount of 100% of the contract price, as security for the faithful performance and payment of all of the Contractor's obligations under the Contract Documents. The bonds shall be issued by a corporate surety acceptable to the Owner, which is authorized to transact business in Michigan and listed in the current U.S. Department of Treasury Listing of Approved Sureties, Circular 570. All bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act. If the surety on any bond so furnished is declared bankrupt or becomes insolvent or its right to do business is terminated in Michigan, or it ceases to meet the requirements of this Paragraph, the Contractor shall promptly, but within ten days thereafter, substitute another bond or bonds and surety, subject to the same qualifications as set forth herein.

AMEND ARTICLE 12 AS FOLLOWS:

12.1.2 Insert after the word "Architect", the first time it appears in Article 12.1.2 the words, ", the Owner or any governmental authority".

12.2.1. Insert after the word "Architect", the first time it appears in Article 12.2.1, the words ", the Owner or any governmental authority".

AMEND ARTICLE 13 AS FOLLOWS:

Revise the last sentence of Subparagraph 13.5.1 as follows:

"The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded, except as provided in paragraph 13.5.3"

13.5.3 Add to Article 13.5.3, immediately after the word "expenses", the words:

", including the cost of retesting for verification of compliance if necessary, until the Architect certifies that the Work in question does comply with the requirements of the Contract Documents, and all such costs shall not be included in computing the Contract Sum".

Add Paragraph 13.9:

13.8 CONFLICTS IN AGREEMENTS

13.9.1 In the event there is any conflict between Supplementary Conditions and AIA Document A101 and / or AIA Document A201, the terms of the Supplementary Conditions shall govern.

AMEND ARTICLE 14 AS FOLLOWS:

Revise Subparagraph 14.1.2:

14.1.2 If one of the above reasons exists, the Contractor may, upon seven additional days' written notice to the Owner and Architect without cure, terminate the Contract. If the reason in 14.1.1.3 or 14.1.1.4 exists, the Contractor may recover from the Owner payment for Work executed and for prove loss with respect to materials, equipment, tools and construction equipment and machinery, including reasonable overhead, profit and damages.

Revise Paragraph 14.2:

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 The Owner may, at any time, terminate the Contract in whole or in part for the Owner's convenience and without cause. Termination by the Owner under this Paragraph shall be binding by a notice of termination delivery to the Contractor specifying the extent of termination and the effective date.

14.2.2 Upon receipt of a notice of termination for convenience, the Contractor shall immediately, in accordance with instructions from the Owner, proceed with the following duties regardless of delay in determining or adjusting amounts due under this Paragraph:

.1 Cease operation as specified in the notice;

.2 Place no further orders and enter into no further subcontracts for materials, labor, services or facilities, except as necessary to complete the continued portions of the Contract;

.3 Terminate all subcontracts and orders to the extent they relate to the work terminated;

.4 Proceed to complete the performance of work not terminated; and

.5 Seek actions that may be necessary, or that the Owner may direct, for the protection and preservation of the terminated work.

14.2.3 Upon such termination, the Contractor shall recover as its sole remedy, payment for work properly performed in connection with the terminated portions of the work prior to the effective date of termination and for items properly and timely fabricated off the project site, delivered and stored in accordance with the Owner's instructions. The Contractor hereby waives and forfeits all other claims for payment and damages, including, without limitation, anticipated profits.

14.2.4 The Owner shall be credited for (1) payments previously made to the Contractor for the terminated portion of the work; (2) claims which the Owner has against the Contractor under the Contract; and (3) the value of the materials, supplies, equipment or other items that are to be disposed of by the Contractor that are part of the Contract sum.

14.4 Add the following language as a new Article 14.4:

14.4 **TERMINATION BY OWNER** The Owner may, at its option, terminate any Contract Document which is an agreement for services, in whole or from time to time in part at any time by written notice thereof to the affected party(s). Upon any such termination, an affected party agrees to waive any claims for contract damages, including loss of anticipated profits, on account thereof, and as the sole right and remedy of the affected party, Owner shall pay the affected party in accordance with (c) and (d) below.

The provisions of the Contract, which by their nature survive final acceptance of' the Work, shall remain in full force and effect after such termination to the extent provided in such provisions.

(a) Upon receipt of any such notice, the affected party shall, unless the notice directs otherwise, immediately discontinue the Work on that date and to the extent specified in the notice; place no further orders or subcontracts for materials, equipment, services, or facilities, except as may be necessary for completion of such portion of the Work as is not discontinued; promptly make every reasonable effort to procure cancellation upon terms satisfactory to Owner of all orders and subcontracts to the extent they relate to the performance of the discontinued portion of the Work and shall thereafter do only such Work as may be necessary to preserve and protect work already in progress and to protect materials, plants and equipment on the Site or in transit thereto.

(b) Upon such termination, the obligations of the Contract shall continue as to portions of the Work already performed and as to bona fide obligations assumed by the affected party prior to the date of termination.

(c) Upon termination, the affected party shall be entitled to be paid the full cost of all Work properly done by the affected party to the date of termination not previously paid for, less sums already received by the affected party on account of the portion of the Work

performed. If at the date of such termination the affected party has properly prepared or fabricated off the Site any goods for subsequent incorporation in the Work, and if the affected party delivers such goods to the Site or to such other place as the Owner shall reasonably direct, then the affected party shall be paid for such goods or materials.

(d) The affected party shall be reimbursed for any charges incurred for preparation of their work such as preparation of shop drawings, mobilization costs, restocking charges, or retrieval of materials previously delivered to the site or acquired specifically for the Project but not yet incorporated into the Work."

RIDER A - GENERAL CONDITIONS

1. CONTRACTS: The CONTRACTOR may let subcontracts in connection with the work and the CONTRACTOR shall properly coordinate the work of such subcontractors. The STATE shall not be liable for any damages or increased costs occasioned by the failure of subcontractors to execute their work as may be anticipated by these documents.

2. BONDS: Subcontractors shall furnish in acceptable form, surety bonds in the amount of 100 percent of the contract sum as security for the faithful performance of this contract and for the payment of all persons performing labor and furnishing materials in connection with this contract. The cost of the aforesaid bonds shall be paid by the subcontractors.

3. CHANGES: Subcontractors shall make changes in the contracted work only as ordered in writing by the CONTRACTOR.

4. INSPECTION: CONTRACTOR shall at all times permit and facilitate inspection of the work by the STATE.

5. TERMINATION FOR BREACH: The STATE may terminate this contract when violations are not stopped immediately and corrected within a reasonable length of time after notification.

6. NONDISCRIMINATION: For all contracts for goods or services in amount of $5,000 or more, for contracts entered into with parties employing three of more employees; in connection with the performance of work under this contract, the CONTRACTOR and subcontractors agree as follows:

    a. The subcontractors will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, age, sex, height, weight or marital status. The subcontractors will take affirmative action to insure that applicants are employed and the employees are treated during employment, without regard to their race, color, religion, national origin, age, sex, height, weight or marital status. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment advertising; layout or termination; rates of pay or other forms of compensation; and selection for training.

    b. The subcontractors will, in all solicitations or advertisements for employees placed by or on behalf of the subcontractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, age, sex, height, weight or material status.

c. The subcontractor will comply with all published rules, regulations, directive and orders of the Michigan Civil Rights Commission relevant to Section 6, 1976 P.A. 453, as amended, which may be in effect prior to taking of bids for the project.

7. PERMITS: The CONTRACTOR and / or subcontractors shall secure from the appropriate agencies ALL REQUIRED PERMITS necessary for proper execution of the work prior to starting work on the project site.

All work shall be executed in accordance with the State of Michigan's Construction Codes, except where work is specified or shown to be above such standard. The work shall be executed in conformity with the drawings and these specifications.

It is the responsibility of the CONTRACTOR to make certain that the drawings and project specifications are in accordance with the applicable laws, statutes, construction codes and regulations.

8. MICHIGAN RIGHT-TO-KNOW LAW: The CONTRACTOR must ensure that subcontractors conform to the provisions of the Michigan Right-to-Know Law, 1986 P.A. 80, which requires employers to: a) develop a communication program designed to safeguard the handling of hazardous chemicals through labeling of chemical containers and development and availability of Materials Safety Data Sheets; b) provide training for employees who work with these chemicals; and; c) develop a written hazard communications program.

The law also provides for specific employee rights. These include: a) the right to be notified (by employer or contractor posting) of the location of Material Safety Data Sheets b) the right to be notified (by employer or contractor posting) of new or revised Material Safety Data Sheet no later than five (5) working days after receipt; and c) the right to request copies of the Material Safety Data Sheet from their employers.

Provision of the State of Michigan's Right-to-Know Law may be found in those sections of the Michigan Occupational Safety and Health Act, which contains Right-to-Know provisions and the Federal Hazard Community Standard, which is part of the Michigan Occupational Safety and Health Act's Right-to-Know Law through adoption.

9. INSURANCE: No work connected with this contract shall be started until the CONTRACTOR has secured evidence from subcontractors of Property Damage Insurance and Public Liability Insurance. The above insurance shall be maintained during the life of this contract. Partial payments shall not relieve the subcontractor from full responsibility for any damage which may result from any cause including fire or other casualty until completion of the contract and final payment. Any casualties shall not relieve the subcontractors from performing the contract.

The CONTRACTOR shall obtain original signed certificates of insurance covering General Liability and Worker's Compensation from each subcontractor immediately after the CONTRACTOR'S Notification of award of the subcontracts.

END OF SUPPLEMENTARY CONDITIONS

SECTION 01010
SUMMARY OF WORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Description.

B. Building Construction Type and Use Classifications.

C. Contracts.

D. Completion of the Work Under this Contract.

E. The Work.

F. Work by Owner.

G. Owner Occupancy.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

B. Provisions in Division 1 – General Requirements are applicable to all the Work and are therefore applicable to each section of the specifications.

C. Additional provisions, which supplement provisions in Division 1 – General Requirements, may be found in Division 22 – Plumbing, Division 23 – Mechanical, and Division 26 – Electrical and apply to those divisions respectively.

1.03 PROJECT DESCRIPTION

A. The Project is the Tuscola County C-Block Shower Addition

B. The Project location is 420 Court Street, Caro, MI 48723.

C. The project shall include all work required for a fully functional building. The existing jail must remain fully operational during construction. The contractor shall develop a construction phasing plan subject to review and approval of the Sheriff's Department to minimize disruption of the jail operation and to maintain security during construction.

D. The Work:

Furnish all materials, labor and incidental services required to complete and leave ready for operation, the shower additions in Cell Block C-1 and C-2 in the Tuscola County Jail. Work includes but is not limited to renovate two janitor closets into new shower stalls. Work includes removal and replacement of concrete slabs, underfloor plumbing, door and wall removal, masonry, miscellaneous steel, carpentry, gypsum board, finishes, plumbing, fire protection, HVAC and electrical..

1.04 BUILDING TYPE AND USE

A. The proposed building is classified under the Michigan Building Code 2009

B. The proposed building is I-3 Institutional.

C. Type of Construction shall be Type IIB.

1.05 CONTRACTS

A. The Project will be performed under a single contract.

1.06 COMPLETION OF THE WORK UNDER THIS CONTRACT

A. Unless a particular item of work is specifically indicated to be incomplete or completed by others, all Work is to be completed under this Contract to achieve a totally finished and functioning facility in all aspects. Provide all items necessary (whether specifically indicated in the specifications/drawings or not) to make the Work complete. This includes providing all labor, materials, equipment and services.

B. “Provide”, “furnish”, “install”, and other similar words (used individually or together) means to execute the Work for the entire process of purchasing the products, transporting the products to the job site, installing the products, making necessary adjustments to the products; unless it is specifically indicated otherwise as “furnish, but do not install” or “install, but do not furnish”.

1.07 THE WORK

A. The Contract Documents in their entirety describe the Work. No individual part or parts of the Contract Documents shall be removed from the context of the entire Contract Documents.

B. The Work for All Trades: The Contractor shall perform all the Work required by the Contract Documents for All Trades. This generally includes the entire construction of a new facility.

C. The building will remain occupied during all phases of construction. Install all necessary safety barricades and measures to protect the occupants at all times.

1.08 OWNER OCCUPANCY

A. Contractor shall coordinate and cooperate with the Owner and Owner's personnel to minimize delay, minimize repetition or errors in layout, and to facilitate Owner's operations.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01019
CONTRACT CONSIDERATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Phasing

B. Inspection and Testing.

C. Schedule of Values.

D. Application for Payment.

E. Alternates.

F. Utility Charges and Permit Fees.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 PROJECT PHASING

A. The existing jail will remain occupied and operational during the construction.

B. Jail security procedures must be maintained during construction.

1.04 INSPECTION AND TESTING

A. The owner will employ and pay for services of independent firms to perform inspections and testing, and report results.

B. Contractor shall coordinate inspection and testing schedules and work requirements with the selected testing firm.

C. Furnish test and approval certificates issued by jurisdictional authorities. Provide Architect/Engineer and Owner with written notice of date and time of tests.

D. The provisions for inspections and tests required by the Contract Documents shall not restrict the Contractor from providing, and paying all costs of, additional inspections and tests he deems necessary to ensure adequate quality of construction, or to comply with inspection and testing requirements of review agencies.

1.05 SCHEDULE OF VALUES

A. Submit typed schedule of values on and AIA Form G703 – Application and Certification for Payment Continuation Sheet.

B. The schedule of values shall list the completed value of component parts of the Work. Follow the table on contents as the format for listing the component parts, and list major items within a component part as separate line item value. Contractor's overhead and profit

shall be a separate line item. The sum of all values listed in the schedule shall equal the total Contract sum.

C. As support data, submit a separate list of all subcontractors indicating for each the name of the subcontractor, description of the subcontractor work, and amount of the subcontract.

1.06 APPLICATIONS FOR PAYMENT

A. The payment period shall be 30 days.

B. Submit a minimum of three copies of each application on AIA Form G702 - Application and Certificate for Payment and AIA Form G703 – Application and Certification for Payment Continuation Sheet.

C. Utilize Schedule of Values for listing items in Application and Certification for Payment Continuation Sheet.

D. Submit all partial and full waivers of lien with each application for the previous payment period.

E. Retention provisions are listed in Document 00800 – Supplementary Conditions.

1.07 ALTERNATES

A. Alternate No. 1A

1. In lieu of the ceramic wall and floor tile, epoxy painted wall and ceiling finishes in the new showers, all shower floors, walls and ceilings shall receive a seamless paint system. This cost shall include deleting the specified ceramic floor and wall tile.

B. Alternate No 1B

1. Provide the Owner with a separate cost to finish the existing showers with the seamless paint system
2. Contact Information:

Prime Coat Coating Systems
4331 Minges Rd
Battle Creek, MI 49015
Contact Robert Vocke (269) 274-4952

C. Alternate No. 2

1. Add to the project the removal and replacement of existing shower control valves.

1.08 UTILITY CHARGES AND PERMIT FEES

A. Owner will directly pay for utility tap or hookup fees for permanent utilities. The General Contractor shall coordinate any submittals to the appropriate municipalities and utility companies for determining the utility charges. The General Contractor shall also coordinate schedules with appropriate municipalities and utility companies for the installation, connection, and activation of the utilities.

B. Permit fees, building permits, etc. shall be paid by the General Contractor as indicated in AIA Document A201 (Subparagraphs 3.7) and Supplementary Conditions 00800 (Subparagraphs 3.7.5). Plan review fees, if required by the local building authority will be paid by the Owner.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01026
UNIT PRICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Authorization to Proceed.

B. Schedule of Unit Prices.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 AUTHORIZATION TO PROCEED

A. Work to be done which is covered by a Unit Price is considered a change in the Work; therefore, Work involving a Unit Price shall be done only with prior direction and authorization to proceed in the form of a Construction Change Directive or a Change Order.

1.04 SCHEDULE OF UNIT PRICES

A. None

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01028
CHANGE ORDER PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Documentation of Changes.

B. Forms.

C. Proposal Requests.

D. Change Orders.

E. Construction Change Directives.

F. Architect's Supplemental Instructions.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 DOCUMENTATION OF CHANGES

A. All directions and communication regarding changes in the Work shall be in writing only.

B. It is the responsibility of the Contractor to see that properly executed written direction for each change in the Work is received before proceeding with any change.

C. Changes can be issued only by the Architect and authorized only by the Owner.

D. Proposed changes requested or recommended by the Contractor must be submitted in writing to the Architect, describing the proposed change in the Work, reason for the change, and its affect, if any, on the Contract Sum or Time. Proposed changes requested or recommended by the Contractor must be issued by the Architect and authorized by the Owner before the Contractor proceeds with any such changes.

1.04 FORMS

A. Forms to be used for the documentation of changes will be designated by Architect.

B. The term "authorization" as it applies to these forms means the Owner's signature executed in the appropriate location on each complete form.

1.05 PROPOSAL REQUESTS

A. Proposal Requests will be issued for the purpose of obtaining itemized quotations for proposed changes in the Work which may affect the Contract Sum or Time. If the proposed changes are accepted, they must be issued and authorized in the form of a Change Order before proceeding with any changes.

B. Contractor will prepare and submit itemized quotations with corresponding supporting documentation within 10 days.

C. Form to be used for the documentation of proposed changes for the purpose of obtaining itemized quotations will be AIA Document G709 – Proposal Request (1993 Edition).

1.06 CHANGE ORDERS

A. Change Orders will be issued for the purpose of ordering changes in the Work that may affect the Contract Sum or Time. Change Orders are not valid until authorization by the Owner. After authorization the Work shall proceed.

B. Form to be used for the documentation of changes in the Work that affects the Contract Sum or Time will be AIA Document G701 – Change Order (1987 Edition).

1.07 CONSTRUCTION CHANGE DIRECTIVES

A. Construction Change Directives will be issued for the purpose of ordering changes in the Work that may affect the Contract Sum or Time, but exact changes to the Contract Sum or Time may not be known at the time of issue. Construction Change Directives are not valid until authorized by the Owner. After authorization, the Work shall proceed and be included in a subsequent Change Order.

B. Form to be used for the documentation of directed changes will be AIA Document G714 – Construction Change Directive (1987 Edition).

1.08 ARCHITECT'S SUPPLEMENTAL INSTRUCTIONS

A. Architect's Supplemental Instructions will be issued for the purpose of ordering minor changes in the Work that do not affect the Contract Sum or Time. After acceptance by the Contractor the Work shall proceed. Architect's Supplemental Instructions do not require authorization by the Owner.

B. Form to be used for the documentation of minor changes that do not affect the Contract Sum or Time will be AIA Document G710 – Architect's Supplemental Instructions (1992 Edition).

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01040
COORDINATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Coordination.

B. Examination.

C. Job Site Administration.

D. Request for Information.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 PROJECT COORDINATION

A. Coordinate scheduling of Work of the various Sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements. Coordinate Work of various Sections with that of other Sections, which require attachment of components. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service.

B. Coordinate submittals to assure efficient and orderly sequence of installation of interdependent construction elements.

C. Verify that utility requirements of operating equipment are compatible with building utilities.

D. Verify and coordinate placement of bearing support items.

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

F. In finished areas conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

G. Coordinate completion and cleanup of the Work of separate Sections in preparation for Substantial Completion.

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

1.04 EXAMINATION

A. Verify that field conditions, surfaces, and prepared openings are acceptable and are ready to receive work.

B. Verify that surfaces are smooth and flat within maximum variation recommended for installation of products and that surfaces are ready to receive Work.

C. Verify that substrate, and adjacent materials are dry as required for products or adhesives.

D. Verify items provided by other Sections of work are properly sized and located. Verify foundations, pads, pits, and position of anchor bolts and other anchoring devices are in the proper location and of proper size.

E. Field measure to verify that dimensions are as shown on Drawings, shop drawings, and as instructed by product manufacturer.

F. Verify that mechanical, electrical, telephone, plumbing and other building items affecting work are placed and ready to receive this work and that all substrate penetrations are complete.

G. Confirm electrical power is available and of correct characteristics as required for installed equipment.

H. Report defects of deficiencies in writing.

I. Verify truss spaces are unobstructed to allow placement of blown-in insulation.

J. Verify block cores are free of mortar to allow free flow of granular insulation. Verify holes and openings have been sealed to prevent escape of insulation.

K. Beginning of installation means acceptance of existing conditions.

1.05 JOB SITE ADMINISTRATION

A. Contractor shall employ a superintendent as required by the General and Supplementary Conditions of the Contract between the Owner and Contractor.

B. Provide the Architect/Engineer and Owner with written notification of the superintendent's name and job trailer telephone and fax numbers within 7 days of their determination.

C. Contractor shall prepare a typewritten alphabetized list of subcontractors and suppliers to be used on the project. The list shall contain company name, company address, name of contact person, telephone and fax numbers, and the portion of the Work to perform.

D. Provide the Architect/Engineer and Owner with a copy of the subcontractor and supplier list within 7 days of notice to start work and periodically update as required by changes to information in the list.

1.06 REQUEST FOR INFORMATION

A. Direct all questions in writing to Landmark Design Group, P.C. by fax at (616) 956-9406 or by email to steve@landmark.us.com.

B. The Request for Information form following this Section of the Project Manual shall be used for all questions and required clarifications.

C. Contractor shall be responsible for assigning Request for Information numbers, and maintaining and publishing once per month a log of all requests. Log shall include a listing of request numbers, request dates, response dates, and brief descriptions of the requests.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

LANDMARK DESIGN GROUP, P.C.

REQUEST FOR INFORMATION

Project Name:	Tuscola County Jail – C-Block Shower Addition	Project No.:	12-005
Requested By:		Request No.:	
Company:		Telephone No.:	
Date:		Fax No.:	

Requested Information:

Response:

cc: Project File

Answered By:

Company:

Date:

SECTION 01045
CUTTING AND PATCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedure.

B. Quality Control.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 PROCEDURE

A. The Contractor shall coordinate all cutting and patching requirements among the Subcontractors.

B. Subcontractors must have approval of the Contractor before all cutting.

C. The Contractor must submit a written request and have approval of the Architect/Engineer before cutting or altering elements which affect:

1. Structural integrity of element.
2. Integrity of weather-exposed or moisture-resistant elements.
3. Efficiency, maintenance, or safety of element.
4. Visual qualities of sight-exposed elements.
5. Work of Owner or separate contractor.

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

1. Fit the several parts together, to integrate with other Work.
2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and non-conforming Work.
4. Remove samples of installed Work for testing.
5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

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

F. Cut rigid materials using masonry saw or core drill.

G. Restore Work with new Products in accordance with requirements of Contract Documents.

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

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

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

K. Identify any hazardous substance or condition exposed during the Work to the Architect/Engineer for decision or remedy.

1.04 QUALITY CONTROL

A. Patching must restore the cut area to original or better condition with no detectable evidence that the area has been patched.

B. Cutting and patching must be done by personnel qualified in the execution of work for the appropriate affected trade. Wherever possible, patching of work shall be done by the original installer of that work, especially when cutting and patching will affect the terms of product warranties.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01050
FIELD ENGINEERING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Scope of Engineering Services.

B. Qualifications.

C. Certification.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 SCOPE OF ENGINEERING SERVICES

A. Provide all engineering services necessary for the proper execution and completion of the Work and as otherwise required by the Contract Documents. Engineering services provided by the Contractor shall not be authorized to make any changes in the Contract Documents.

B. Engineering services provided by the Contractor may generally include, but are not necessary limited to: building and site layout, design of temporary structures and facilities during construction; design for all construction field procedures; performance of monitoring, testing, and reports; design and preparation of shop drawings and pre-engineered items; design of construction programs, processes, and facilities to meet legal and safety requirements. (This general description specifically includes, but is not limited to, temporary shoring and bracing for excavation and for construction, temporary control of ground and surface water, temporary handrails and guardrails, and scaffolding.)

C. The Contractor shall provide for the location and protection of survey control and reference points. Control datum for survey is indicated on Drawings.

D. The Contractor shall provide for establishment of elevations, lines, and levels using recognized engineering survey practices.

E. Submit a copy of registered site drawing and certificate signed by the Land Surveyor that the elevations and locations of the Work are in conformance with the Contract Documents.

1.04 QUALIFICATIONS

A. Engineers must be licensed to practice in the state in which the Project is being constructed as acceptable to the building official having jurisdiction over the Project.

B. Engineers must be qualified and experienced in the discipline and scope of the Work required and acceptable to the Architect/Engineer.

1.05 CERTIFICATION

A. Where submittals are required to be prepared by, or under the direct supervision of, licensed personnel (Architect, Land Surveyor, Professional Engineer, etc.), each submittal shall bear the seal and signature of the licensed person in responsible charge.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01060
REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Applicable Requirements.

B. Rated Construction.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 APPLICABLE REQUIREMENTS

A. The Contractor shall comply with all laws, ordinances, rules, orders and regulations of local, state, federal and other authorities relating to the execution of the Work.

1.04 RATED CONSTRUCTION

A. For rated construction, provided appropriate products that are tested and labeled to assure compliance with system requirements for rating.

B. Where specific assembly identification is given, use exact assembly indicated.

C. Where specific assembly identification is not given, submit identification of assemblies to be used which meet the ratings and details required by the Contract Documents, and are acceptable to the review agency having jurisdiction.

D. Provide labels, affidavits, and other such identification to verify compliance when requested.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01090
REFERENCES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Applicable Editions.

B. List of Reference Standards.

C. Federal Government Agencies.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 APPLICABLE EDITIONS

A. Unless specifically indicated otherwise, comply with editions of referenced standards that are the most current, effective as of the date of the Contract Documents.

B. References to methods of measurement or payment in reference standards are not applicable.

C. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference standards.

D. Obtain copies of standards when required by Contract Documents and maintain a copy on site as required by individual Sections.

E. Should specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

1.04 LIST OF REFERENCE STANDARDS

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturer's Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACIL	American Council of Independent Laboratories
ACPA	American Concrete Pipe Association
ADC	Air Diffusion Council
AGA	American Gas Association
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALI	Associated Laboratories
ALSC	American Lumber Standards Committee
AMCA	Air Movement and Control Association
ANSI	American National Standards Institute

APA	American Plywood Association
ARI	Air Conditioning and Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASA	Acoustical Society of America
ASC	Adhesive and Sealant Council
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning and Engineers
ASME	American Society of Mechanical Engineers
ASPE	American Society of Plumbing Engineers
ASSE	American Society of Sanitary Engineering
ASTM	ASTM
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders' Hardware Manufacturers Association
BIA	Brick Institute of America
CISPI	Cast Iron Soil Pipe Institute
CRI	Carpet and Rug Institute
CRSI	Concrete Reinforcing Steel Institute
CTI	Ceramic Tile Institute of America
DHI	Door and Hardware Institute
DLPA	Decorative Laminate Products Association
EIA	Electronic Industries Association
ETL	ETL Testing Laboratories, Inc.
FGMA	Flat Glass Marketing Association
FM	Factory Mutual Engineering and Research
GA	Gypsum Association
HMA	Hardwood Manufacturers Association
IEEE	Institute of Electrical and Electronic Engineers
IGCC	Insulating Glass Certification Council
MBMA	Metal Building Manufacturers Association
MCAA	Mechanical Contractors Association of America
ML/SFA	Metal Lath/Steel Framing Association
NAAMM	National Association of Architectural Metal Manufacturers
NAPA	National Asphalt Pavement Association
NCMA	National Concrete Masonry Association
NEC	National Electric Code
NECA	National Electrical Contractors Association
NEII	National Elevator Industry, Inc.
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
N.F.P.A.	National Forest Products Association
NHLA	National Hardwood Lumber Association
NPA	National Particleboard Association
NPCA	National Paint and Coatings Association
NRCA	National Roofing Contractors Association
NSF	National Sanitation Foundation
NWWDA	National Wood Window and Door Association
PCI	Prestressed Concrete Institute
RFCI	Resilient Floor Covering Institute
SDI	Steel Deck Institute
S.D.I.	Steel Door Institute
SGCC	Safety Glazing Certification Council
SJI	Steel Joist Institute

SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPRI	Single Ply Roofing Institute
UL	Underwriters Laboratories
WWPA	Western Wood Products Association
W.W.P.A.	Woven Wire Products Association

1.05 FEDERAL GOVERNMENT AGENCIES

CE	Corps of Engineers
CS	Commercial Standard
DOC	Department of Commerce
DOT	Department of Transportation
EPA	Environmental Protection Agency
FHA	Federal Housing Administration
FS	Federal Specification
GSA	General Service Administration
MIL	Military Standardization Documents
NBS	National Bureau of Standards
OSHA	Occupational Safety and Health Administration

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01200
PROJECT MEETINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Attendance.

B. Pre-construction Meeting.

C. Progress Meetings.

D. Pre-installation Conferences.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 ATTENDANCE

A. The Contractor must attend all project meetings and be represented by the superintendent and any other personnel required to accomplish the purpose of the meetings.

B. The Contractor shall arrange for the attendance of the Subcontractors and other interested parties as determined necessary or as requested by the Owner or the Architect.

C. Each representative in attendance must have the authority to make binding decisions and obligations on behalf of their respective organizations.

1.04 PRE-CONSTRUCTION MEETING

A. A pre-construction meeting will be held after award of the Contract and before commencement of construction. Time and place of the meeting will be determined by the Architect.

1.05 PROGRESS MEETINGS

A. The Contractor shall schedule progress meetings at one month intervals to report to the Owner and the Architect the progress of the Work and to discuss pertinent issues relative to the proper and timely execution of the Work. Meeting schedule shall accommodate Owner and Architect's schedule.

B. The Contractor shall provide an appropriate meeting place at the job site to accommodate the number of people attending.

C. The Contractor shall conduct the progress meetings, prepare agenda with copies distributed in advance of the meetings, record and distribute the minutes of the meetings to the Owner and the Architect/Engineer. The Contractor shall also make copies of the minutes and distribute them to all Subcontractors and other interested parties as appropriate.

D. The Contractor shall arrange for and conduct separate meetings on the same day to be attended by major Subcontractors, Suppliers and other interested parties as appropriate to agenda topics for each meeting. The Contractor shall prepare agenda with copies

distributed in advance for participants, record and distribute the minutes of the meetings to the Owner and Architect/Engineer, and Subcontractors and Suppliers affected by decisions made during the meeting.

1.06 PRE-INSTALLATION CONFERENCES

A. When required due to the complexity of the Work, convene a pre-installation conference at the work site prior to commencing that work. Intent of the pre-installation conference is to review conditions of the installation, preparation and installation procedures, and coordination with related work.

B. Require attendance of parties directly affecting, or affected by, such Work.

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

D. Prepare agenda, preside at conference, record minutes and distribute copies to participants and Architect/Engineer.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01300
SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Information for Contractor's Use.

B. Submittals.

C. Submittal Identification.

D. Time of Submittals.

E. Content.

F. Contractor's Review.

G. Architect's Review.

H. Shop Drawings.

I. Product Data.

J. Samples.

K. Manufacturers' Certificates.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 INFORMATION FOR CONTRACTOR'S USE

A. The Contractor shall obtain all shop drawings, product data, and samples necessary for the proper execution of the Work.

B. The Contract shall obtain all information available for each manufacturer/supplier for their respective products being used in the Work.

C. The Contractor shall read all information to arrive at a clear understanding of how each product is to be incorporated into the Work. The Contractor shall obtain additional technical assistance from the manufacturer/supplier as necessary to achieve such understanding.

D. The Contractor shall distribute appropriate information to other entities involved in the execution of their applicable portions of the Work.

1.04 SUBMITTALS

A. The Contractor shall submit to the Architect the shop drawings, product data, and samples which are requested for submittal.

B. The Contractor shall submit to the Architect specific written notification of any item or portion of the Work proposed which varies from the Contract Documents, before such item is incorporated in the Work. The Architect will rely on the Contractor having complied with the Contract Documents in their entirety except where written notification of variance has been submitted to the Architect and the Architect has issue written notification to proceed with the proposed variance under change order procedures.

C. Provide space for Contractor and Architect/Engineer review stamps.

D. On revised and resubmitted submittals, identify all changes made since previous submittal.

E. The Contractor shall retain one set of all submittals at the job trailer available to the Architect/Engineer, Owner, and Building Official until completion of the project.

1.05 SUBMITTAL IDENTIFICATION

A. All submittals shall be accompanied by a letter of transmittal stating the date, the project name, the Architect's project number, the Owner, the Contractor, the Subcontractor or supplier, the Architect, the item being submitted, the number of copies, the purpose of the submittal, the five digit specification section number, and any other pertinent information.

1.06 TIME OF SUBMITTALS

A. Schedule submittals to expedite the Project. Coordinate submittals of related items and for interfacing work.

B. All submittals which are required for the selection of materials, finishes, colors, etc. shall be submitted at the same time. No selection will be made by the Architect for any one item until all items are available for concurrent review and coordination. Submittals shall be made no later than 30 days after the date of commencement of the Work.

1.07 CONTENT

A. Submittals shall contain sufficient detail so as to describe the item and show compliance with the Contract Documents, and to provide all additional information required to incorporate the item into the Work.

B. Drawing shall be professionally drafted and presented in the most appropriate scale (sufficiently large enough) to clearly communicate the information therein.

C. Samples shall be actual physical products in as large of size as in normally available for each item. For products which may have a range in color, or finish, or texture, submit adequate number of samples to show the entire range.

1.08 CONTRACTOR'S REVIEW

A. Apply Contractor's stamp and signature on each submittal certifying that review and 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.

B. Submittals will not be reviewed by the Architect without prior review and verification stamp by the Contractor.

C. Submittals rejected by the Contractor shall not be forwarded to the Architect except upon special request.

1.09 ARCHITECT'S REVIEW

A. Architect's review shall be verified on each submittal with a stamp and signature.

B. Architect's stamp shall have the following choices to be selected as most appropriate:

1. "REVIEWED" – Indicates that no corrections have been noted. No deviations from the Contract Documents are approved. Affected portions of the Work may commence in strict compliance with the Contract Documents.

2. "REVIEWED AS NOTED" – Indicates that some corrections have been noted. No deviations from the Contract Documents are approved. Affected portions of the Work may commence in strict compliance with the Contract Documents.

3. "REVISE AND RESUBMIT" – Indicates that some corrections have been noted which will require further review. Affected portions of the Work may not commence. Make all necessary revisions and resubmit.

4. "REJECTED" – Indicates major non-commence. The Contractor shall contact the Architect to obtain a better understanding of the requirements of the Contact Documents. Affected portions of the Work may not commence. Make a new submittal that is in compliance with the Contract Documents.

1.10 SHOP DRAWINGS

A. Submit shop drawings in the form of one reproducible transparency and three opaque reproductions. The Architect/Engineer will return the reproducible transparency, retain two reproductions, and distribute one reproduction to the Owner.

B. After review, reproduce and distribute in accordance with preceding procedures and for Record Documents described in Section 01700 – Contract Closeout.

C. Structural shop drawings shall bear the seal of a Professional Engineer registered in the State of Michigan.

D. Shop drawings shall include as appropriate for product:

1. Members: Sizes, spacing, attachments and fasteners, cambers, loads, connections, design calculations, and locations and size of openings. Include erection drawings, elevations, and details where applicable. Indicate welded connections with AWS A2.0 welding symbols. Indicate net weld lengths.

2. Fabrication: Profiles, sizes, dimensions, connections, attachments, anchorage, size and type of fasteners, and accessories. Include plans, elevations, and details as required to fully describe work.

3. Finishes: Indicate finishes including decorative laminate, paint color, stain and sealer, and other finishes. Obtain approval for finishes before ordering.

4. Hardware: Profiles, sizes, function, dimensions, grade, finish, and attachment.

1.11 PRODUCT DATA

A. For manufacturers standard printed literature and samples, submit five copies. The Architect/Engineer will return two copies, retain two copies, and distribute one copy to the Owner. Literature shall be nearly bound. Clearly mark each copy to identify applicable

products, models, options, and other data. Supplement the manufacturers' standard data to provide information unique to the Project.

B. After review, distribute in accordance with preceding procedures and for Record Documents described in Section 01700 – Contract Closeout.

1.12 SAMPLES

A. For products requiring Architect/Engineer's approval submit three sets of samples. The Architect/Engineer will return one set of samples, retain one set of samples, and distribute one set of samples to the Owner.

B. Submit four sets of samples for items specified as "finish selected by Architect/Engineer", samples shall indicate colors, textures and patterns available.

C. Samples shall illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices.

D. Reviewed samples which may be used in the Work are indicated in individual specification Sections. None of these samples shall be retained by the Architect/Engineer.

1.13 MANUFACTURER'S CERTIFICATES

A. When specified in individual specification Sections, submit manufacturers' certificate to Architect/Engineer for review, in quantities specified for Product Data.

B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect/Engineer.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01310
PROGRESS SCHEDULES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Progress Schedule.

B. Progress Report.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 PROGRESS SCHEDULE

A. Submit a detailed progress schedule which shows both projected and completed work. Form of schedule shall be either bar graph or CPM chart at the Contractor's option.

B. The schedule shall show all of the work to be done divided into specific categories. Each category shall be narrow in scope so as to describe a single task with an identifiable time period in which that task is to be completed.

C. The schedule shall be updated monthly and be submitted with each application for payment.

D. The schedule shall be used to help evaluate the progress of the work toward timely completion. If the work falls behind schedule, the Contractor shall implement a plan to bring the progress of the work back up to schedule. All steps taken to maintain completion as scheduled (additional labor force, overtime, expedited material handling, substitutions, etc.) shall be at no additional cost to the Owner.

1.04 PROGRESS REPORTS

A. Prepare a monthly progress report to be submitted with each application for payment. Report shall indicate the work completed in the previous month to date and the work scheduled for the next month. State whether project is ahead of schedule, on schedule, or behind schedule, and a projected date of completion. Include any other specific items of concern related to the progress of the work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01400
QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Laying Out Work.

B. Quality Assurance and Control of Installation.

C. Mock-up.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 LAYING OUT THE WORK

A. The General Contractor shall locate general reference points, lay out Work and be responsible for all lines, elevations and measurements of the building, utilities and other work executed by him under the Contract. He must exercise proper precaution to verify figures on the Drawings before laying out Work and will be held responsible for any error resulting from his failure to exercise such precaution.

B. The General Contractor shall make provision to preserve property line stakes, bench marks or datum point. If any are lost, displaced, or disturbed through neglect of the Contractor, his agents or employees, he shall pay the cost of restoration.

C. Each contractor before commencing work shall verify grades, lines, levels, locations, and dimensions and shall examine spaces, surfaces and areas indicated on Drawings to receive his work. Commencing work implies acceptance of existing conditions.

D. Verify all dimensions shown on the Drawings and obtain all measurements required for proper execution of work. Verify before beginning construction in areas indicated to be barrier free that all dimensions and fixtures comply with requirements of Michigan Barrier Free Design Law and the Americans with Disabilities Act.

E. Information pertaining to preliminary investigations such as the survey, location of utilities, existing structures, and existing grades appear on the Drawings. While such data has been collected with reasonable care, there is no expressed or implied guarantee that conditions so indicated are entirely representative of those actually existing or that unforeseen developments may not occur. Each contractor must put his own interpretation on results of such investigation and shall satisfy himself as to materials upon which his work may be placed. Where underground services, utilities, structures, etc. are located on the Drawings or given at the site they are based on the available records but are not guaranteed to be complete or correct. They are merely given to assist each contractor.

1.04 QUALITY ASSURANCE AND CONTROL OF INSTALLATION

A. The Contractor shall maintain a program of quality control monitoring for all the Work. Provide additional support personnel (such as manufacturers' representatives, consultants, recognized technical experts, etc.) who are required or requested to observe, direct, or evaluate the Work.

B. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

C. Comply fully with manufacturers' instructions, including each step in sequence.

D. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

E. 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.

F. Perform work by persons qualified to produce workmanship of specified quality. Employ personnel licensed or approved by manufacturer when such employment is a condition of manufacturer's warranty.

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

1.05 MOCK-UP

A. Mock-up shall be erected and Architect/Engineer shall be given notification that mock-up is prepared for approval. Notification shall be made 14 days prior to scheduled beginning of work contained in mock-up.

B. Assemble and erect specified items, with specified attachment and anchorage devices, flashing, seals, and finishes.

C. Where mock-ups are used, they shall be maintained until completion of the Work for the purpose of a standard of quality to be met.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01500
CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary Utilities.

B. Temporary Controls.

C. Field Offices.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 SCOPE

A. The Contractor shall provide all construction facilities and temporary controls which are necessary for the execution of the Work and as otherwise required be the Contract Documents.

B. Remove all temporary items when not longer needed.

1.04 EXISTING SITE UTILITIES

A. Owner's utilities which currently exist at the site (which may include electric, gas, water) may be used for construction in reasonable amounts by the Contractor, and will be paid directly by the Owner to the utilities agency.

1.05 TEMPORARY ELECTRICITY

A. Provide and pay for electric service, distribution, and lighting.

B. Use of electrical system which is part of the new Work is allowed, but shall be limited to small hand tools which will not trip breakers.

1.06 TEMPORARY LIGHTING

A. Provide and maintain lighting for construction operations.

B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

C. Maintain lighting and provide routine repairs.

D. Permanent building lighting may not be utilized during construction.

1.07 TEMPORARY HEATING, COOLING, AND VENTILATION

A. Provide and pay for heating, cooling, and ventilating. Temperature and humidity must be appropriate for installation and protection of the materials being used.

B. Maintain a constant temperature range (minimum 60 degrees, maximum 90 degrees, and more specific as required by individual materials) before, during, and after the installation of finish materials such as floor tile, carpet, paint, wall covering, ceilings, woodwork, etc.

C. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

D. No part of the new building system may be used until after construction has progressed to the point where no dust, dirt, pollutants, contaminants, odors, etc. will be circulated through the system, and written permission is received from the Architect.

1.08 TELEPHONE SERVICE

A. Provide, maintain and pay for telephone and fax service to field office at time of project mobilization.

1.09 TEMPORARY WATER SERVICE

A. Provide, maintain and pay for potable water at the job site for drinking and construction purposes. Provide and remove temporary branch piping with outlets located so water is available by hoses with threaded connections as required for construction.

1.10 TEMPORARY SANITARY FACILITIES

A. Provide, maintain and pay for required facilities and enclosures at the job site. Coordinate placement of temporary facilities with Owner.

1.11 TEMPORARY FIRE PROTECTION

A. Provide, maintain and pay for fire protection at the job site.

1.12 BARRIERS AND ENCLOSURES

A. Provide and maintain appropriate barriers, e.g., a fence, around perimeter of Work to prevent unauthorized entry into construction and staging areas.

B. Provide and maintain appropriate barricades for the protection of the site, stored materials, existing structures, adjacent properties, and vehicular traffic.

1.13 SECURITY

A. The construction site shall be kept secure at all time so as to allow only authorized personnel on to the site.

1.14 ENVIRONMENTAL CONTROLS

A. Provide for the control of dust, dirt, erosion, moisture (water, snow, ice, vapor), noise, pollution, and other potentially harmful or irritating conditions encountered during construction. Environmental control applies to the entire site: exterior, interior, new construction, and existing facilities.

1.15 TRAFFIC CONTROLS

A. Provide flagmen, signs, lights, and other temporary facilities required for the control of traffic.

B. Parking and staging shall be within the construction limits unless otherwise authorized by the Owner.

1.16 WATER CONTROL

A. Maintain excavations free of water.

B. Protect site from puddles or running water. Provide water barriers as required to protect site from soil erosion and to prevent damage to existing site unaffected by work of this contract.

1.17 EXTERIOR ENCLOSURES

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

1.18 PROTECTION OF INSTALLED WORK

A. Protection of installed Work shall be the Contractors responsibility until the time of substantial completion.

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 installed materials that are susceptible to damage from sunlight or precipitation from prolonged exposure to these conditions until material is covered by successive work.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. 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.

G. Prohibit traffic from entering landscaped areas.

1.19 SAFETY

A. Provide easy access to the entire building for the public fire department and maintain unobstructed and free passage for egress from the building(s).

B. Provide and maintain the required amount of fire extinguisher and familiarize all persons working on the project with their location and operation.

C. Flammable liquids shall not be stored within the building. Paint thinners and gasoline should be handle inside the building only in approved safety containers.

D. Provide and maintain shoring and bracing to prevent earth from caving or washing into the project excavations, and to protect existing underground utilities, sewers, etc., encountered during excavation work from collapse or other type of damage.

1.20 FIELD OFFICES

A. Provide a field office at the job site to accommodate the Contractor's needs and obligation of the Contract Documents, and for use by the Owner and Architect while at the job site. Among other things, the field office must be suitable for the keeping of the project record copy documents and for the conducting of project meetings (conditioned space 65 degrees to 75 degrees, electrical power and lighting, telephone, deck and file space, table and chairs).

1.21 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary above grade or buried utilities, equipment, facilities, materials, prior to Final Application for Payment inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01600
MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Products.

B. Transportation and Handling.

C. Storage and Protection.

D. Product Options.

E. Items Not Specified.

F. Substitutions.

G. Color Selections.

H. Installation.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

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. Products other than those specified by manufacturer made of recycled or reused materials must be approved by Architect/Engineer. Submit manufacturers or suppliers certification of performance with request for approval.

1.04 TRANSPORTATION AND HANDLING

A. Transport and handle Products in accordance with manufacturer's instructions.

B. Deliver products wrapped and crated in manufacturer's original shipping packaging, complete with labels and instructions for handling, storing, unpacking, protecting, and installing, in a manner to prevent damage to components or marring of surfaces. Mark each package for installation location.

C. Package hardware items individually; label and identify package with door opening code to match hardware schedule. Deliver keys to Owner by security shipment direct from hardware supplier.

D. Transport products to prevent twisting warping or detrimental exposure to elements.

E. Promptly inspect shipments to assure that Products comply with requirements, quantities are correct, and Products are undamaged.

F. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage. Lifting or handling equipment shall be capable of supporting products in positions anticipated during storage, transportation, and erection.

G. File required claims for Products damaged in transport.

H. Take appropriate action to correct deficiencies in a timely fashion so as not to cause delay of the Work.

1.05 STORAGE AND PROTECTION

A. Store and protect Products in accordance with manufacturer's instructions, with seals and labels intact and legible.

B. Store temperature sensitive products for 24 hours prior to application within temperature range as recommended by the manufacturer for best workability.

C. For exterior storage of fabricated Products, place on sloped supports, above ground.

D. Store preformed and manufacturer finished material in a clean, dry area, stack flat, prevent twisting, bending, or abrasion, blocked off ground to prevent sagging, and to provide ventilation. Prevent contact during storage with materials which may cause discoloration, staining, or damage.

E. Provide off-site storage and protection when site does not permit on-site storage or protection.

F. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation. Store organic and porous materials off ground in ventilated and protected manner to prevent deterioration from moisture.

G. Store sensitive Products in weather-tight, climate controlled enclosures. Store loose granular materials on solid flat surfaces in a well-drained area; prevent mixing with foreign matter. Store cementitious materials and aggregates in manner to prevent wetting, deterioration or intrusion of foreign materials.

H. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of Products to permit access for inspection. Periodically inspect to assure Products are undamaged and are maintained under specified conditions.

J. Store ferrous items off the ground and in a manner to prevent damage to the corrosion resistant coatings.

K. Protection is to be all-inclusive and, among other things, includes protection against natural causes such as moisture (water, snow, ice, condensation, etc.), wind, temperature, sunlight, dirt, dust, etc., and protection against man-made causes.

1.06 PRODUCT OPTIONS

A. Design is generally based on product of first manufacturer named.

B. Provide products from specific manufacturers as applicable. The naming of a manufacturer indicates that the general quality of work produced by that manufacturer is acceptable, but does not necessarily mean that each manufacturer's specific product meets all requirements of the Contract Documents. Select a manufacturer whose product does meet all requirements of the Contract Documents.

C. Where no manufacturer is specified, use any manufacturer's product which meets or exceeds the requirements of the Contract Documents.

D. Where one or more manufacturers is specified, use one of the specified manufacturer's products which meets or exceeds the requirements of the Contract Documents.

E. If a manufacturer's standard product does not meet all the requirements of the Contract Documents, the product shall be modified and supplied as a custom made item by the manufacturer.

F. Where one manufacturer's specified product is specified (by name, model number, series, etc.), the products of other listed manufacturers are acceptable only if they meet all the standard set by the products specified and the rest of the Contract Documents.

G. Products specified (by name, model number, series, etc.) may still need additional modifications and/or options to comply with the Contract Documents. Provide products that include all these necessary adjustments.

H. Within 10 days after the date of commencement of the Work, submit a list of all products to be used which identifies the names of the manufacturer, supplier, and installer.

1.07 ITEMS NOT SPECIFIED

A. For items which are not specified but are required to properly complete the Work, provide items of quality and scope appropriate for the Project.

1.08 SUBSTITUTIONS

A. The materials, products and equipment described in the Contract Documents establish a standard of required function, dimension, appearance and quality that may, in some cases, be met by a proposed substitute.

B. No substitution will be considered prior to receipt of Bids unless written request from a Bidder for approval has been received by the Architect at least ten days prior to the date for receipt of Bids. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including drawings, cuts, performance and test data and any other information necessary for an evaluation. A statement setting forth changes in other materials, equipment or other portions of the Work, including changes in the work of other contracts that incorporation of the proposed substitute would require shall be included. The burden of proof of the merit of the proposed substitute is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

C. If the Architect approves a proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

D. No substitutions will be considered after the Contract award unless specifically provided in the Contract Documents.

E. Substitutions shall not alter the design intent of the Contract Documents.

F. Substitutions shall be equal to or exceed the specified materials, products and equipment as determined by the Architect/Engineer.

G. Alteration to the Work required by approved substitution shall be the responsibility of the Contractor.

1.09 COLOR SELECTIONS

A. Color selections for any product will be selected (by the Architect) from a full range of all standard, and premium, and shall not be limited in the number of different colors selected, unless specifically indicated otherwise in the specification sections for each product.

1.10 INSTALLATION

A. Installation of material and equipment shall be in accordance with the requirements of the Contract Documents and the manufacturer's requirements and recommendations for specific products.

B. Inspect all wok for proper installation and operation. Record inspections in written reports, and submit reports when requested.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01650
FACILITY STARTUP/COMMISSIONING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General Procedures.

B. Specific Procedures.

C. Records.

D. Starting Systems.

E. Testing, Adjusting, and Balancing.

F. Manufacturer's Instruction.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 GENERAL PROCEDURES

A. Facility startup includes (but is not limited to) requirements for putting the Project in operating order such as starting systems, operating equipment, testing to ensure correct operation and function, demonstration, training, and verification.

B. Schedule startups at least two weeks in advance with all parties involved. This may include representatives of the Owner, Architect, Engineer, Contractor, subcontractor, supplier, manufacturer, and others as appropriate.

C. Where Owner’s operating personnel are available, provide training to the level of expertise required to properly operate and maintain systems and equipment. Owner’s operating personnel shall be assumed to be competent to operate the types of systems and equipment installed on this Project (Owner shall be notified if the Contractor has reason to believe otherwise).

1.04 SPECIFIC PROCEDURES

A. Comply with requirements for startup of specific item as indicated in their respective sections of the specifications.

1.05 RECORDS

A. Maintain records of startup activities in form of written reports. Report information shall include date, weather, personnel in attendance, procedures, results, and other pertinent information. Submit copies of written reports when requested.

1.06 STARTING SYSTEMS

A. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other conditions which may cause damage.

B. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

C. Verify wiring and support components for equipment are complete and tested.

D. Execute startup in accordance with manufacturers' instructions.

1.07 TESTING, ADJUSTING, AND BALANCING

A. Employ, and pay for services of an independent firm to perform testing, adjusting and balancing.

B. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.08 MANUFACTURER'S INSTRUCTIONS

A. Provide manufacturers' printed instructions for startup and adjusting include description of equipment, method of operation and control including motors, pump units, signals, and special or non-standard features provided.

B. Provide parts catalogs with complete list of equipment replacement parts with equipment description and identifying numbers.

C. Provide schematic diagrams covering electrical equipment installed, including changes made in final work, with symbols listed corresponding to identity of markings on equipment.

D. Compile information as required by provisions of Section 01700.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01700
CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Closeout Procedures.

B. Adjusting.

C. Operation and Maintenance Data.

D. Warranties.

E. Spare Parts and Maintenance Materials.

F. Record Documents

G. Instruction of Owner's Personnel.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 CLOSEOUT PROCEDURES

A. Contractor shall submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect/Engineer's inspection. The completed Work shall be without any outstanding or concurrent Work remaining.

B. Contractor shall prepare and submit to the Architect/Engineer a comprehensive list of items to be completed or corrected prior to Architect/Engineer’s inspection.

C. Provide to the Architect/Engineer two (2) copies of all submittals required by governing or other authorities, prior to final Application for Payment.

D. Provide to the Architect/Engineer two (2) copies of all required certifications and occupancy approvals from local and state authorities having jurisdiction over the Work, prior to final Application for Payment. Receipt of all certificates and occupancy approvals in and of itself does not necessarily connote substantial completion.

E. Provide to the Architect/Engineer three (3) copies of all certificates of testing and inspection as specified in the individual specification Sections and as required by the conditions of the Contract, prior to final Application for Payment.

F. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

G. Before issuance of a final Application for Payment, the Contractor shall submit evidence satisfactory to the Architect/Engineer that all payrolls, material bills, and other indebtedness connected with the Work and for which the Contractor is responsible, have been paid.

H. Submit final waivers of lien.

1.04 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation, prior to final inspection.

1.05 OPERATION AND MAINTENANCE DATA

A. Submit to the Architect/Engineer for review, two (2) copies of all required operation and maintenance manuals as specified in the individual specification Sections, prior to final inspection.

B. Submit sets bound in 8-1/2 x 11-inch text pages, three D side ring binders with durable plastic covers.

C. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project.

D. Internally subdivide the binder contents with permanent page dividers, logically organized as described below with tab titling clearly printed under reinforced laminated plastic tabs.

E. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, type on 24-pound white paper.

F. Part 1: Directory, listing names, addresses, telephone and facsimile numbers, and contact persons of the Architect/Engineer, Contractor, Subcontractors, and suppliers.

G. Part 2: Operation and maintenance instructions arranged by system. For each category, identify names, addresses, telephone and facsimile numbers, and contact persons of the Subcontractors and suppliers. Identify the following:

1. Significant design criteria.
2. List of equipment.
3. Parts list for each component.
4. Operating instructions.
5. Maintenance instructions for equipment and systems.
6. Maintenance instructions for finishes including recommended cleaning methods and materials and special precautions identifying detrimental agents.

1.06 WARRANTIES

A. Provide two (2) notarized copies of all required warranties as specified in the individual specification Sections.

B. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.

C. Provide Table of Contents and assemble in binder with durable plastic cover.

D. Submit to Architect/Engineer for review and approval, prior to final Application for Payment.

E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

F. Architect shall forward warranties to Owner upon acceptance.

1.07 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance, and extra materials in quantities specified in individual specification Sections.

B. Deliver to Project site and obtain receipt, prior to final Application for Payment.

1.08 RECORD DOCUMENTS

A. Contractor shall insure that an accurate, on-going record is kept of all deviations from the approved design Drawings and Specifications, which may occur as actually constructed.

B. Upon completion of the Work, the Contractor shall submit to the Architect/Engineer for review, two (2) complete sets of the record ("as-built") drawings and specifications.

C. Contractor shall obtain receipt for the record documents and submit said receipt with request for final payment of the Contract. Final payment due the Contractor will be withheld until this clause has been fulfilled.

1.09 INSTRUCTION OF OWNER'S PERSONNEL

A. Before final inspection, schedule with Owner to instruct Owner's designated personnel in operation, adjustment and maintenance of products, equipment, and systems.

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.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01710
CLEANING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cleaning During Construction.

B. Final Cleaning.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 SCOPE

A. Provide all cleaning necessary for the proper execution and completion of the Work and as otherwise required by the Contract Documents.

1.04 CLEANING DURING CONSTRUCTION

A. The job site must at all times be kept clean of all obstructions so as to provide easy access for execution of the Work, inspection and observation. 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. Clean affected areas of the job site after removal of waste materials or rubbish.

D. Clean portions of the Work as necessary between installation of different materials and trades.

E. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

F. Remove waste materials, debris, and rubbish from site periodically and dispose off-site.

1.05 FINAL CLEANING

A. When all construction is complete (or before final inspection and the Owner takes occupancy under Substantial Completion), the area of the Work shall be professionally cleaned and presented to the Owner for acceptance. Cleaning shall include all items; interior, exterior exposed and concealed.

B. All cleaning shall be in accordance with products manufacturer's recommendations.

C. The Contractor is responsible for expediting the cleaning, washing, waxing and polishing required within the technical sections of the specifications.

D. Remove all foreign matter, spots, oil, and construction dust so as to put the Project in a complete and finished condition ready for acceptance and use intended.

E. Clean interior and exterior glass and surfaces exposed to view, remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

F. Clean equipment and fixtures to a sanitary condition.

G. Clean filters of operating equipment.

H. Clean debris from roofs, gutters, downspouts, and drainage systems.

I. Clean site, sweep paved areas, rake clean landscaped surfaces.

J. Remove waste and surplus materials, rubbish, and construction facilities from site.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01720
PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Contract Documents.

B. Daily Log.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 CONTRACT DOCUMENTS

A. Provide a new set of Contract Documents at the job site to be used only for the development of project record documents for the Owner. Record changes, dimensions for field located items, and other pertinent information required to show the Work in the condition it was completed. Information shall be neatly drawn and noted with red pencil or ink at the time which that part of the Work is being done.

1.04 DAILY LOG

A. The Contractor shall keep a daily log and provide a copy for the Owner and Architect at the job site each day. Log information shall include the date, weather conditions, time of day for start and finish of work, each trade and number of people working, description of work done that day, and other pertinent information to record the daily activities.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01740
WARRANTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Correction of Warranted Work.

B. General Project Warranty.

C. Specific Product Warranty.

D. Manufacturer's Standard Product Warranty.

E. Countersigned Warranty.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 CORRECTION OF WARRANTED WORK

A. Replace or repair items that are defective or have failed under the terms of a warranty. Work shall be restored to the intended original condition.

B. When correcting warranted Work, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

1.04 GENERAL PROJECT WARRANTY

A. The Work, as a whole, is subject to warranty by the Contractor. All items shall be warranted for the full duration of time legally available to the Owner, in addition to any other warranties.

1.05 SPECIFIC PRODUCT WARRANTY

A. Specific product warranty items are in addition to the general project warranty from the Contractor, and give specific warranty requirements for selected products throughout the specification sections.

B. Specific product warranties are from the Contractor and do not required submittal of a warranty form to be valid because they are a requirement of the Contract Documents and are validated by the execution (signature) of the Contract Documents/Agreement Form.

1.06 MANUFACTURER'S STANDARD PRODUCT WARRANTY

A. Manufacturer's standard product warranties are preprinted written warranties published by individual manufacturers for particular products. Many products come with manufacturer's standard product warranties, whether specified as such or not. It is the responsibility of the Contractor to pass along to the Owner all such warranties for the Owner's acceptance or refusal. These warranty submittals shall be submitted through the Architect along with other contract closeout submittals.

1.07 COUNTERSIGNED WARRANTY

A. Countersigned warranties are warranties that require the signature of parties other than, or in addition to, the Contractor (such as a subcontractor, installer, supplier, manufacturer, etc.), and are therefore warrantable directly from the other parties to the Owner.

B. Countersigned warranties require the submittal of a properly executed (signed) warranty form from the warrantor directly to the Owner.

C. Countersigned warranties are incorporated into the project when requested by the Owner (presumably upon advise of their legal, insurance, or other counsel) and included the following warranty items: none.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 02070
SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 WORK INCLUDED

A. Remove designated building equipment and fixtures. Cap and identify utilities.

B. Remove designated building elements and building elements not designated as required for new work.

C. Removal of all existing finishes including floor, wall, ceiling, etc, as required for proper installation of new materials.

1.02 RELATED WORK

A. All parts of the Contract Documents relate to the Work specified in this section.

1.03 COORDINATION

A. Conduct demolition to minimize interference with adjacent building areas. Maintain protected egress and access at all times.

B. Provide, erect, and maintain temporary barriers and security devices.

C. Coordinate extent of demolition with requirements of new construction.

D. The demolition drawings are intended to indicate the bounds of work required. It is not expected that every item will be specifically called out in the documents. Contractor shall provide all demolition required for new construction regardless if shown on drawings or not.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine area of work and drawings to gain a full understanding for the extent of work.

B. Determine the extent and limits of items to be removed including but not limited to wall, ceiling, and floor materials and finishes; doors, windows, hardware and frames; plumbing, electrical, and mechanical items and accessories; furnishings and equipment.

C. Coordinate all removal required to facilitate new construction.

3.02 PREPARATION

D. Erect and maintain weatherproof closures for exterior openings.

E. Protect existing items that are not scheduled for removal.

F. Disconnect, remove, and cap affected utility services within demolition areas as required for work and in accordance with applicable codes.

G. Mark location of disconnected utilities. Identify and indicate capping locations on Project Record Documents.

3.03 BUILDING DEMOLITION

A. Maintain barriers necessary to protect public.

B. Control dust from spreading to adjacent buildings and property.

C. Cut and cap all utilities prior to demolition.

D. Investigate the structure prior to demolition to fully understand the effort required to demolish the building.

E. Use of explosives is forbidden.

F. Building removal shall include but not limited to roof, walls, finishes, slabs, entire foundation / footings and connected utilities.

G. Legally dispose of all debris.

3.04 GENERAL DEMOLITION

A. Demolish in an orderly and careful manner. Protect existing structural members, interior partitions and exterior architectural elements. Utilize saw-cutting, torch-cutting, dismantle, and similar techniques as appropriate for new construction.

B. Except for items indicated for reuse, remove demolished materials from site as work progresses. Do not burn or bury materials on site.

C. Remove materials to be re-installed or retained in manner to prevent damage. Store materials and protect materials against damage from construction activities or exposure to weather.

D. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered. Remove and dispose of materials in accordance with applicable environmental codes and requirements.

E. Upon completion of demolition work, leave areas of work in clean condition, ready for new construction.

3.05 WALL, FLOOR, AND FRAME REMOVAL

A. Remove masonry walls and frames where indicated in a manner to allow new jambs, and partitions to be toothed into existing wall.

B. Remove masonry above new wall openings as required to provide new lintels.

C. Remove masonry for new openings in a manner to allow installation of new bullnose masonry to be toothed into existing wall at jambs.

D. Full height wall demolition and wall demolition indicated for new door openings shall be removed to or below floor line as required for new floor finish. Floor shall be level to within 1/8 inch in ten feet.

E. Refer to structural drawing requirements when removing bearing walls.

F. Saw-cut floor slabs as required for installation of new footings and utilities.

3.06 CEILING REMOVAL

A. Remove ceilings as required for new construction and in areas indicated on demolition plan.

B. Remove panels, suspended grid, trim, and hangers. Clean adjoining wall surfaces of fasteners that will affect final finish appearance.

C. Remove plaster, lath, suspension, and trim materials.

D. Remove suspended panel ceilings for re-installation after above ceiling work is complete in locations shown or where otherwise required.

3.07 FINISH REMOVAL

A. Remove existing finishes where indicated on drawings and where existing finish material will be detrimental to application of new finish materials.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. If differing requirements are identified elsewhere (in these specifications or on drawings or separate instructions), the more stringent requirement shall be met.

1.2 SUMMARY

A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

B. Division 31 Section "Earthwork" for all site preparation..

C. Refer to drawings for additional information.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concrete mixture.

C. Shop Drawings: For steel reinforcement.

D. Material test reports certificates.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specification for Structural Concrete,"
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

C. Preinstallation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.
2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

    a. High-density overlay, Class 1 or better.
    b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
    c. Structural 1, B-B or better; mill oiled and edge sealed.
    d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.

D. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch , minimum.

E. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

F. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish stainless steel units that will leave no corrodible metal closer than 1.5 inches to the plane of concrete surface exposed to view.
2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface not exposed to view.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

C. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.

D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

2.3 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I

   a. Fly Ash: ASTM C 618, Class C or F.
   b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C 33, graded, as indicated/ required.

1. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94/C 94M and potable.

D. Air-Entraining Admixture: ASTM C 260.

E. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

F. Synthetic Fiber: Monofilament or fibrillated polypropylene fibers engineered and designed for use in concrete pavement, complying with ASTM C 1116, Type III, 1/2 to 1-1/2 inches long.

2.4 VAPOR BARRIER

A. Plastic Vapor Barrier: ASTM E 1745, Class A, minimum 15 mils, and with a permeability rate of 0.01 perms or lower. Include manufacturer's recommended adhesive or pressure-sensitive tape.

2.5 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.

G. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

H. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

2.6 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

2.7 WATERSTOPS

A. Flexible Rubber Waterstops: CE CRD-C 513; for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.

1. Profile: Contractor’s standard
2. Dimensions: 4 inches by 3/16 inch thick nontapered.

B. Flexible PVC Waterstops: CE CRD-C 572; for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.

1. Profile: Contractor’s standard
2. Dimensions: 4 inches by 3/16 inch thick nontapered.

C. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch.

2.8 CONCRETE MIXTURES

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

B. Proportion normal-weight concrete mixture as indicated on drawings.

2.9 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.10 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

1. Class A, 1/8 inch for smooth-formed finished surfaces.
2. Class B, 1/4 inch for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 VAPOR BARRIERS

A. Plastic Vapor Barriers: Place, protect, and repair vapor barriers according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches and seal with manufacturer's recommended tape.
2. Seal all penetrations (including pipes) per manufacturer's instructions
3. Lap Vapor Barrier over footings and turn-up along foundation walls.

3.5 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.6 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
5. Space vertical joints in walls 16'-0". Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth as indicated on drawings and as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 07 Section "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.7 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

C. Cold-Weather Placement: Comply with ACI 306R.

D. Hot-Weather Placement: Comply with ACI 305R.

3.8 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and

patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.

C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:

1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.9 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in 1 direction.

1. Apply scratch finish to surfaces indicated and to receive concrete floor toppings to receive mortar setting beds for bonded cementitious floor finishes.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces indicated, to receive trowel finish, and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces indicated, exposed to view, or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.

2. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-foot- long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 1/8 inch.

E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated, where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel finished floor surfaces.

F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.10 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306R for cold-weather protection and ACI 305R for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308R, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

   a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
   b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
   c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project..

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

   a. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer, unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.11 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact,

and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.12 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Steel reinforcement placement.
2. Steel reinforcement welding.
3. Headed bolts and studs.
4. Verification of use of required design mixture.
5. Concrete placement, including conveying and depositing.
6. Curing procedures and maintenance of curing temperature.
7. Verification of concrete strength before removal of shores and forms from beams and slabs.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

    a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

3. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.

4. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
5. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
6. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
7. Compression Test Specimens: ASTM C 31/C 31M.

    a. Cast and laboratory cure one set of two standard cylinder specimens for each composite sample.
    b. Cast and field cure one set of two standard cylinder specimens for each composite sample.

8. Compressive-Strength Tests: ASTM C 39/C 39M.

    a. Test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
    b. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
    c. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
10. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
11. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
12. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
13. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
14. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

15. Correct deficiencies in the Work that test reports and inspections indicate dos not comply with the Contract Documents.

D. Measure floor and slab flatness and levelness according to ASTM E 1155 within 48 hours of finishing.

END OF SECTION 03300

SECTION 04220

CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. If differing requirements are identified elsewhere (in these specifications or on drawings or separate instructions), the more stringent requirement shall be met.

1.2 SUMMARY

A. Section Includes:

1. Concrete masonry units (CMU's).
2. Steel reinforcing bars.

1.3 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Owner will engage a qualified independent testing agency to perform preconstruction testing indicated below. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

1. Concrete Masonry Unit Test: For each type of unit required, according to ASTM C 140 for compressive strength.
2. Mortar Test (Property Specification): For each mix required, according to ASTM C 109/C 109M for compressive strength.
3. Mortar Test (Property Specification): For each mix required, according to ASTM C 780 for compressive strength.
4. Grout Test (Compressive Strength): For each mix required, according to ASTM C 1019.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For reinforcing steel. Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement." Show elevations of reinforced walls.

C. Material Certificates: For each type and size of product indicated. For masonry units include material test reports substantiating compliance with requirements.

D. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91 for air content.
2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

1.5 QUALITY ASSURANCE

A. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.

1.6 PROJECT CONDITIONS

A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 MASONRY UNITS, GENERAL

A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

B. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E 119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

2.2 CONCRETE MASONRY UNITS

A. Shapes: Provide shapes indicated and for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.

B. CMUs: ASTM C 90.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength as indicated on drawings.
2. Weight Classification: Medium weight.
3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.

C. Glazed Block: stretchers and bullnose units jambs and caps.
   1. Astra-Glaze-SW as manufactured by Trenwyth Industries, Inc., One Connelly Road, P.O. Box 438, Emigsville, PA 17318, (800) 223-1924
   2. Spectra-Glaze II as manufactured by Burns & Russell Co., 4230 Boston St., P.O. Box 6063, Baltimore, MD 21231, (410) 837-0720
   3. Structural Glazed Facing Tile as manufactured by Stark Ceramics, Inc., P.O. Box 8880, Canton, OH 44711, (800) 321-0662

2.3 MASONRY LINTELS

A. General: Provide one of the following:

B. Concrete Lintels: ASTM C 1623, matching CMUs in color, texture, and density classification; and with reinforcing bars indicated. Provide lintels with net-area compressive strength not less than CMUs.

C. Concrete Lintels: Precast or formed-in-place concrete lintels complying with requirements in Division 03 Section "Cast-in-Place Concrete," and with reinforcing bars indicated.

D. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs with reinforcing bars placed as indicated and filled with coarse grout.

2.4 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

B. Hydrated Lime: ASTM C 207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Masonry Cement: ASTM C 91 (for use in interior non-load-bearing walls only).

E. Mortar Cement: ASTM C 1329.

F. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979. Use only pigments with a record of satisfactory performance in masonry mortar.

G. Colored Cement Product: Packaged blend made from portland cement and hydrated lime or mortar cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.

H. Aggregate for Mortar: ASTM C 144.

   1. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
   2. White-Mortar Aggregates: Natural white sand or crushed white stone.

3. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

I. Aggregate for Grout: ASTM C 404.

J. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

K. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs, containing integral water repellent by same manufacturer.

L. Water: Potable.

2.5 REINFORCEMENT

A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.

B. Masonry Joint Reinforcement, General: ASTM A 951.

1. Interior Walls: Mill Hot-dip galvanized, carbon steel.
2. Exterior Walls: Hot-dip galvanized, carbon steel.
3. Wire Size for Side Rods: W1.7 or 0.148-inch diameter.
4. Wire Size for Cross Rods: W1.7 or 0.148-inch diameter.
5. Wire Size for Veneer Ties: W1.7 or 0.148-inch diameter.
6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
7. Provide in lengths of not less than 10 feet , with prefabricated corner and tee units.

C. Masonry Joint Reinforcement for Multiwythe Masonry:

1. Adjustable (two-piece) type, either ladder or truss design, with one side rod at each face shell of backing wythe and with separate ties that extend into facing wythe. Ties have two hooks that engage eyes or slots in reinforcement and resist movement perpendicular to wall. Ties extend at least halfway through facing wythe but with at least 5/8-inch cover on outside face.

2.6 TIES AND ANCHORS

A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.

1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M; with ASTM A 153/A 153M, Class B-2 coating.
2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
3. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch- diameter, hot-dip galvanized steel wire.
2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from 0.25-inch diameter, hot-dip galvanized steel wire.

C. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.060-inch- thick, steel sheet, galvanized after fabrication.
2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from 0.25-inch- diameter, hot-dip galvanized steel wire.
3. Corrugated Metal Ties: Metal strips not less than 7/8 inch wide with corrugations having a wavelength of 0.3 to 0.5 inch and an amplitude of 0.06 to 0.10 inch made from [0.060-inch- thick, steel sheet, galvanized after fabrication] [0.075-inch- thick, steel sheet, galvanized after fabrication] [01.05-inch- thick, steel sheet, galvanized after fabrication] with dovetail tabs for inserting into dovetail slots in concrete and sized to extend to within 1 inch of masonry face.

D. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins unless otherwise indicated.

E. Anchor Bolts: Headed steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153/A 153M, Class C; of dimensions indicated.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

A. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

2.8 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
2. Limit cementitious materials in mortar to portland cement, mortar cement, and lime.
3. Limit cementitious materials in mortar for exterior and reinforced masonry to portland cement, mortar cement, and lime.
4. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C 270 and BIA Technical Notes 8A, Property Specification. Provide the following types of mortar for applications stated unless another type is indicated.

1. For masonry below grade or in contact with earth, use Type M or S.
2. For reinforced masonry, use Type S.
3. For mortar parge coats, use Type S.
4. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls Type S
5. For interior load-bearing walls, Type S
6. For interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.

D. Grout for Unit for dimensions of grout spaces and Masonry: Comply with ASTM C 476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 pour height.
2. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

PART 3 - EXECUTION

3.1 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
5. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
3. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.2 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

C. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

E. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

F. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.

G. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.3 MORTAR BEDDING AND JOINTING

A. Lay hollow CMUs as follows:

1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.

B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.4 CONTROL AND EXPANSION JOINTS

A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

B. Form control joints in concrete masonry:

1. Fit bond-breaker strips into hollow contour in ends of concrete masonry units on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.

3.5 MASONRY JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.

1. Space reinforcement not more than 16 inches o.c.
2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

3.6 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

A. Anchor masonry to structural steel and concrete where masonry abuts or faces structural steel or concrete to comply with the following:

1. Provide an open space not less than 1/2 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.7 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 loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
2. Limit height of vertical grout pours to not more than 60 inches**.**

3.8 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to meet specified requirements shall be done at Contractor's expense.

B. Inspections: Level 2 special inspections according to the "International Building Code."

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
3. Place grout only after inspectors have verified proportions of site-prepared grout.

C. Testing Prior to Construction: One set of tests.

D. Testing Frequency: One set of tests for each 1500 sq. ft. of wall area or portion thereof.

E. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.

F. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.

3.9 PARGING

A. Parge exterior faces of below-grade masonry walls, where indicated, in 2 uniform coats to a total thickness of 3/4 inch.

B. Use a steel-trowel finish to produce a smooth, flat, dense surface. Form a wash at top of parging and a cove at bottom.

C. Damp-cure parging for at least 24 hours and protect parging until cured.

3.10 REPAIRING, POINTING, AND CLEANING

A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
2. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

3.11 MASONRY WASTE DISPOSAL

A. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.

1. Do not dispose of masonry waste as fill within 18 inches of finished grade.

B. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 04220

SECTION 05500
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated lintels and custom metal items.

PART 2 PRODUCTS

2.01 MATERIALS

A. Channels, Angles and Plates: ASTM A36, plain and ASTM A153 class B2 galvanized.

2.02 FASTENING

A. Bolts, Nuts, and Washers: ASTM A325, plain and ASTM A153 class B2 galvanized.

B. Welds: AWS D1.1.

C. Concrete and grouted masonry expansion bolts: HILTI KWIK Bolt II or equal.

2.03 FABRICATION

A. Fit and shop assemble in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured, seal joined members by continuous welds.

C. Grind joints flush and smooth with adjacent finish surface. Make joints butt tight, flush, and hairline. Ease edges to small uniform radius.

D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component.

E. Supply components required for anchorage. Fabricate anchors and related components of same material and finish as fabrication.

F. Drill and thread holes for gate hardware attachment. Drill gate strike jamb railing as require for hardware wiring.

2.04 FINISH

A. Prime Paint: Steel Structures Painting Council Specification 15-68T, type I (red oxide), minimum 1.5 mil dry film.

B. Provide galvanized steel for all fabrications that will be exposed to weather.

C. Do not prime metal intended to bond with concrete.

PART 3 EXECUTION

3.01 COORDINATION

A. Coordinate work of this Section with work Section 03300 and 04220 for anchors, and sleeves to be cast in concrete or built into masonry.

3.02 PREPARATION

A. Verify that field condition is acceptable and are ready to receive work.

B. Clean and strip primed steel items to bare metal where site welding is required.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Field weld components indicated on shop drawings. Perform field welding in accordance with AWS D1.1.

C. After installation prime welds, abrasions, and surfaces not shop primed.

3.04 ERECTION TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch.

B. Maximum Offset From True Alignment: 1/4 inch.

END OF SECTION

SECTION 09250
GYPSUM BOARD SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal framing.

B. Gypsum board

1.02 REFERENCES

A. Gypsum Association GA-214, Levels of Gypsum Board Finish

B. Gypsum Association GA-216-89, Application and Finishing of Gypsum Board

PART 2 PRODUCTS

2.01 CEILING/BULKHEAD FRAMING

A. Select from the following systems:

B. Conventional framing system

1. Cross Furring: 3/4 inch rolled channel; 0.30 lb/ft.
2. Main Runners: 1 1/2 inches hot rolled channel; 1.12 lb/ft.
3. Hangers: 8 gage galvanized wire.
4. Galvanizing: ASTM A526 G60, minimum.

C. Suspended T framing system: Drywall furring system by Armstrong Ceilings, Suspension System & Acoustical Walls, (888) 234-5464

2.02 GYPSUM BOARDS

A. Moisture Resistant Gypsum Board: 5/8'' thick.

2.03 SECURITY BACKING

A. ¾'' thick exterior grade plywood.

2.04 ACCESSORIES

A. Beads and trims: PVC corners, L's, J's, control joints, shapes as required.

PART 3 EXECUTION

3.01 COORDINATION

A. Coordinate with other work for installation of blocking and anchors

B. Coordinate with electrical and mechanical work for installation of bucks, anchors, and blocking to be placed in or behind stud framing.

3.02 EXAMINATION

C. Verify that conditions are ready to receive work.

D. Verify field measurements are as shown on Drawings.

E. Verify that rough-in utilities are properly located.

F. Beginning of installation means installer accepts existing conditions.

3.03 CEILING FRAMING INSTALLATION

A. Install hangers at 4 feet on center maximum both directions. Coordinate placement of hangers with structure and mechanical above.

B. Install main runners parallel to line of building equally spaced at 4 feet on center maximum. Use galvanized material at areas of high humidity.

C. Install cross runners perpendicular to main runners spaced at 16 inches on center. Use galvanized material at areas of high humidity.

D. Install perimeter J-bead at all location where ceilings abut walls maintain tight joint. Install control joints at not more than 30 feet on center both directions.

3.04 GYPSUM BOARD INSTALLATION

A. Install gypsum board in accordance with manufacturer's instructions and GA - 216-89.

B. Erect gypsum board perpendicular to framing with ends and edges occurring over firm bearing.

C. All partitions shall extent full height from floor to underside of deck. Install sound batt insulation within all wall cavities and gypsum board sheathing full height of the wall.

D. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board joint that will remain exposed abuts dissimilar materials.

END OF SECTION

SECTION 09300
TILE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Floor Tile

B. Base Tile

C. Wall Tile

D. Setting Materials

E. Grouting Materials

F. Accessories

1.02 REFERENCES

A. Tile Council of America, Handbook for Ceramic Tile Installation

1.03 OPERATION AND MAINTENANCE DATA

A. Submit cleaning and maintenance data under provisions of the General Requirements.

1.04 COORDINATION

A. Coordinate with work of Section 03300 for floor slab recesses and requirements prior to placement of slabs.

B. Match existing tile at patch areas, field verify prior to ordering.

PART 2 PRODUCTS

2.01 FLOOR AND BASE TILE

A. Ceramic mosaic floor tile: CMT-1A Field tile color, CMT-1B&C Accent tile colors: Select from the following products:

5. Unglazed ceramic mosaics, price group 2, 2 x 2 inches as manufactured by American Olean Tile Company, 1000 Cannon Ave., Lansdale, PA 19446, (215) 393-2705.

6. Unglazed ceramic mosaics, group 2, 2 x 2 inches as manufactured by Dal -Tile Corporation, 7834 C.F.Hawn Freeway, Dallas, Texas 75217, 1-800-933-8453.

7. Mosaic base tile by the same manufacturer as the ceramic mosaic floor tile. CMB-1: 6" high consisting of 1 row of 2" cove, and 2 rows of 2'' straight.

2.02 CERAMIC WALL TILE

A. Ceramic wall tile CWT-1A field color, price group 2, select from the following manufacturers.

1. Bright and Matte, 6 x 6 inches as manufactured by American Olean Tile Company, 1000 Cannon Ave., Lansdale, PA 19446, (215) 393-2705.

2. Semi-gloss and Matte, 6 x 6 inches as manufactured by Dal-Tile Corporation, 7834 C.F. Hawn Freeway, Dallas, Texas 75217, 1-800-933-8453.

A. Wall tile trim: size, color, and shade to match field tile for the following

1. Wainscot cap - bullnose
2. Incorners - square or round.
3. Outcorners - bullnose.
4. Jambs - Bullnose where tile work projects from jamb.

B. Maintain grout joint equal to spacing within panel for mosaic tile

2.03 SETTING MATERIALS

A. Epoxy mortar, ANSI A118.3

2.04 GROUTING MATERIALS

A. Epoxy grout: ANSI A118.3, match existing grout: TEC – 908 Dove Gray

2.05 ACCESSORIES

A. Movement joints and transitions strips: Anodized aluminum color as selected by Architect.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work.

B. Coordinate installation method as required for existing and new substrate materials.

C. Beginning of installation means installer accepts condition of existing substrate.

3.02 PREPARATION

A. Protect surrounding work from damage or disfigurement.

B. Vacuum clean existing substrate and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

D. Apply conditioner to surfaces as recommended by adhesive manufacturer.

3.03 INSTALLATION - GENERAL

A. Request tile pattern from Interior Design Consultant. Do not interrupt tile pattern through openings.

B. Cut and fit tile tight to penetrations through tile. Form corners neatly.

C. Cut floor tile that would bridge construction or control joints in concrete slabs at the joint continuing pattern either side of joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.

E. Sound tile after setting. Replace hollow sounding units.

F. Allow tile to set for a minimum of 48 hours prior to grouting.

G. Grout tile joints, use epoxy grout.

3.04 INSTALLATION FLOOR FINISH

A. Epoxy Installation: Epoxy Mortar and Grout - TCA Handbook for Ceramic Tile Installation, 1995 Handbook Number F131-95. Wall tile installed to ANSI A108.4; floor tile installed to ANSI A108.6; and grout installation to ANSI A108.10.

B. Install tile using epoxy mortar and grout method.

C. Maintain grout joint spacing of 1/16 an inch for wall tile.

D. Maintain grout joint equal to spacing within panel for mosaic tile. Maintain grout joint spacing of 1/4 an inch for glazed floor tile and paver floor tile. Maintain grout joint spacing of 3/8 an inch for quarry floor tile.

E. Provide appropriate and required tile trim for wall, floor, and base tile installations.

F. Provide movement joint at floor slab control joints and provide transition strip where floor tile terminate along a horizontal surface.

3.05 CLEANING

A. Clean work under provisions of the General Requirements.

B. Clean tile surfaces.

3.06 PROTECTION

A. Protect finished installation.

B. Do not permit traffic over finished floor surface.

END OF SECTION

SECTION 09900
PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Interior Painting – epoxy

B. Interior seamless paint system

1.02 COORDINATION

A. All shop primed metal items (door, door and window frames, metal fabrications, manufactured items) shall be field painted, verify which materials are pre-finished and which are shop primed. Coordinate finishing.

B. Refer to drawings for painting materials notes.

C. Request color schedule from architect indicating major building areas, components and paint color.

1.03 SUBMITTALS

A. Submit paint schedule, provide manufacturer's product data for all materials to be used and list building areas and proposed paint materials.

1.04 PROJECT RECORD DOCUMENTS

A. Maintain and submit project record documents for paint bases and tinting used throughout project under provisions of the General Requirements.

1.05 OPERATION AND MAINTENANCE DATA

A. Submit cleaning and maintenance data under provisions of the General Requirements.

PART 2 PRODUCTS

2.01 PAINTS, PRIMERS, SEALERS AND FILLERS

A. Manufacturer: Sherwin Williams 1999 color formulas to coordinate with existing colors.

B. Interior Paint (gypsum, cement, masonry, wood): High gloss enamel, water born epoxy

A. Block Filler for Concrete Block:

2.02 SEAMLESS PAINT SYSTEMS (ALTERNATE NO. 1)

A. Manufacturer: Prime Coat Coating Systems, 4331 Minges Rd., Battle Creek, MI 49015, ph (269) 274-4952, contact Robert Vocke.

B. System shall include:

1. Standard system including, but not limited to block filler, patching compound, primer, build coat and finish coat.
2. Finish coat at floor – Include optional non slip coating. Color to be selected
3. Finish coat at walls/ceilings – Include optional finish coat. Color to be selected
4. Include optional rolled cove base. Color to be selected.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content meets the recommendations of the manufacturer.

D. Beginning of installation means acceptance of existing surfaces.

3.02 PREPARATION

A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.

B. Correct minor defects and clean surfaces which affect work of this Section.

C. Shellac and seal marks which may bleed through surface finishes.

D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

E. Concrete Block - surface must be free of dirt, loose or excess mortar and thoroughly dry. Allow new block construction to dry 30 days minimum before painting.

F. Poured Concrete - surface must be cleaned of all grease, dirt, oil, laitance, efflorescence and loose mortar and cement. Maximum moisture content shall be 15%. Allow newly poured concrete to cure 30-60 days before painting. Temperature of Air concrete and materials must be maintained above 55 F for 24 hours before, during, and after painting.

G. Aluminum - surface must be cleaned of all oil, grease, dirt, and oxide by wiping, etching, scrubbing, steam cleaning, or solvent cleaning.

H. Galvanized Metal - surface should be weathered a minimum of 6 months then solvent or blast cleaned of all dirt, oils, and mill scale.

I. Misc. Iron/Steel - surface must be cleaned of all oil, grease, mill scale, dirt, foreign matter, rust using solvent or blast methods.

J. Wood (Exterior) - surface must be clean and dry to maximum 12% moisture content. No painting shall be done immediately after rain, during fog, or when temperature is below 50 F.

K. Wood (Interior) - all surfaces shall be sanded smooth with the grain. Surface blemishes shall be corrected. The room shall be cleaned of dust. Lightly sand between coats.

L. Gypsum Board - surface must be clean, dry, and free of dust.

3.03 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfigurement.

B. Repair damage to other surfaces caused by work of this Section.

C. Furnish drop cloths, shields, and protective methods to prevent spray or dropping from disfiguring other surfaces.

D. Remove empty paint containers from site.

3.04 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Do not apply finishes to surfaces that are not dry.

C. Apply one primer coat and two finish coats.

D. Apply each coat to uniform finish.

E. Sand lightly between coats to achieve required finish.

F. Allow applied coat to dry before next coat is applied.

G. Where clear finishes are required, tint fillers to match stained wood. Apply filler prior to finish coat.

H. Prime back surfaces of interior and exterior woodwork with primer paint.

I. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

3.05 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Paint unfinished equipment.

B. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

C. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are pre-finished.

D. Replace identification markings on mechanical or electrical equipment if painted over.

E. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint, to limit of sight line. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.

F. Paint exposed conduit and electrical equipment occurring in finished areas.

G. Paint exposed fire sprinkler lines located in finished areas. Verify locations with A/E

H. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

I. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.06 CLEANING

A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.

B. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

C. During progress of Work, maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

END OF SECTION

DIVISION 21 00 00
FIRE PROTECTION
TABLE OF CONTENTS

END OF SECTION

SECTION 21 00 50

GENERAL FIRE PROTECTION REQUIREMENTS

CONTENTS

PART 1 GENERAL

1.01 APPLICABLE STANDARDS

A. Refer to specific specification sections for reference standard that are applied in this specification.

B. Where referenced standards and code requirements both apply, the more stringent requirement shall be met.

1.02 COORDINATION

A. Arrange with other Trades for the provision of all chases, slots, and openings necessary for the proper installation of the Fire Protection Work.

B. Coordinate the installation of all required supporting devices.

1.03 DEFINITIONS

A. “Code”, “Regulation”, “Ordinance”, “Law”, and “Rule” are used interchangeably in this Specification to mean requirements of all authorities (local, State, Federal, or other) which may have jurisdiction over the construction of the work. Where one is used, all are implied.

B. “Concealed Exterior Installations” refers to exterior Fire Protection work that is protected from weather conditions and contact by building components, but is exposed to outdoor ambient temperatures.

C. “Concealed Interior Installations” refers to interior Fire Protection work that is concealed from physical contact by building components when the project is complete.

D. “Exposed Exterior Installations” refers to exterior Fire Protection work that is exposed to exterior ambient conditions and not protected from contact by permanent building components.

E. “Exposed Interior Installations” refers to interior Fire Protection work that is exposed to view in the final construction.

F. “Finished Spaces” are spaces that are generally accessible to the building staff and general public.

1.04 PROJECT RECORD DOCUMENTS

A. Provide in accordance with the requirements of Division 1 and other portions of this Division.

B. Maintain a “clean” set of project drawings for the sole purpose of recording deviations from the design. This set of drawings shall be maintained at the project site, with all modifications carefully marked-up as the work progresses.

C. This set of drawings shall show all work as actually installed with accurate vertical and horizontal measurements of concealed and buried work.

D. This set of Project Record Documents shall be certified as accurate by the Contractor and turned over to the Owner for future reference.

1.05 PROJECT / SITE CONDITIONS

A. Visit the project site before bidding to determine the actual existing conditions imposed on the construction of the work. The Contractor retains sole responsibility for interpreting the impact of existing conditions on his work.

1.06 QUALITY CONTROL

A. All work shall be performed by Contractors skilled in the work required with a minimum of three (3) years experience.

B. All materials shall be supplied by manufacturers having a minimum of three (3) years experience in the production of the item provided.

1.07 REGULATORY REQUIREMENTS

A. All work on this project shall be performed in accordance with all applicable codes, standards, and references.

B. Applicable Codes: All references to codes, specifications, and standards in the specifications sections and on the drawings shall mean and are intended to be the edition, amendment, or revision of such standard in effect at the date of these contract documents.

C. Obtain and pay for all required permits and inspections as a part of the base bid for the project. Obtain certificates of such inspections, and provide copies of same to the Design Professional.

D. It is this contractor's responsibility to prepare documents as required by the State Fire Marshal, submit same to his office and obtain approval of the proposed installation as a part of his base bid for the project work.

1.08 RELATED DOCUMENTS

A. The general conditions of the Contract, including Conditions of the Contract and Division 1 of the Specification.

B. Construction Drawings, all Addenda, Bulletins and Change Orders.

1.09 RESPONSIBILITY

A. Submission of a bid is considered evidence that the Contractor has visited the site, examined the Drawings and Specifications of **all Trades**, and has fully informed himself as to all Project conditions.

B. Submission of a bid implies the Contractor is proficient, experienced and knowledgeable of all regulations and conditions which may affect any portion of the Work included in his bid.

C. The Contractor is responsible to comply with the requirements of **all** of the construction documents provided for this project.

D. Where clarification is required with regard to which trade is responsible for a particular item of work, such clarification is to be requested of the design professional, in writing, in a timely manner.

1.10 SCOPE OF WORK

A. These specifications and the accompanying drawings describe the furnishing and installation of all material, equipment, supplies, labor and supervision required for the complete performance of all operations relating to the Fire Protection Trades Work.

B. The work provided shall be complete in all respects and shall result in satisfactorily operating systems that have been approved for occupancy by the authority(ies) having jurisdiction.

C. This project consists generally of a renovation of an existing county jail facility. The jail shall remain in operation during the entire course of construction. Special security procedures will be implemented at the discretion of Sheriff staff which may cause the Contractor loss of work efficiency. No claim for extra compensation will be allowed for this condition.

1.11 STORAGE AND PROTECTION

A. Refer to Division 1.

B. Store all materials and equipment to protect against damage of all types.

C. Provide appropriate barriers to maintain safe construction areas.

1.12 SUBMITTALS

A. Submittals for review, except color samples, shall be made to the engineer in pdf electronic format. The engineer will add his review stamp to the electronic format and return it to the contractor for his records.

B. Submittals for review shall be made prior to the purchase of materials. Submittal procedures shall be in accordance with Division 1 of these specifications, and the following:

1. Submit copes for distribution with product data grouped to include complete submittals of related system, products, and accessories in a single submittal. Each submittal shall be clearly marked to indicate equipment number, specification section, etc., which the submittal describes.
2. Mark dimensions and values in units to match those specified.
3. Data must include job name, dimensions, capacities, construction characteristics, and installation instruction.

4. Submittals must be thoroughly checked by the Contractor and must contain his stamp of approval before being sent to the Design Professional for review.
5. Submittals not conforming to the above requirements will be returned without review.

C. The Design Professional will **review** shop drawings for general conformance to the construction documents. This **review** is provided as a convenience to the Contractor by the Design Professional. The Design Professional will **review** submitted information with reasonable care, however, no responsibility accrues to the Design Professional for errors of omission in the **review** of submitted materials. The Contractor retains complete, sole responsibility for providing materials and equipment that are in conformance to the construction documents.

1.13 UTILITY CONNECTIONS – NOT USED

PART 2 MATERIALS

2.01 ACCESS PANELS

A. Provide access panels for all equipment which must be located in “in-accessible” locations (above fixed ceilings, behind walls, etc.). Access panels shall conform to the requirements of the General Trades Specifications. Turn panels over to the General Trades Contractor for installation. Provide fire rated access panel where such penetrations are through fire rated assemblies.

PART 3 EXECUTION

3.01 CUTTING AND PATCHING

A. Perform in accordance with the requirements of Division 1.

B. Perform, or cause to be performed, all cutting and patching necessary for the installation of the work, unless specifically noted to the contrary elsewhere.

C. No structural members shall be cut without written authorization from the Design Professional. All such cutting, when authorized, shall be done in strict accordance with the instructions of the Design Professional.

D. In general, roof and wall openings required for Fire Protection equipment and systems shall be provided by this Contractor. The size and location of these openings shall be the responsibility of this Contractor.

3.02 FINAL ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.03 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean interior and exterior surfaces exposed to view. Vacuum carpeted and soft surfaces where materials have been deposited due to the work of this Contactor.

C. Clean debris from site.

D. Remove waste and surplus materials, rubbish, and construction facilities from the site.

3.04 PROGRESS CLEANING

A. Maintain work areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition at all times.

B. All openings in piping systems shall be protected during construction to prevent the entrance of foreign materials.

3.05 REMOVAL OF TEMPORARY UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary equipment, facilities, materials, prior to Substantial Completion.

B. Clean and repair damage caused by installation or use of temporary work.

3.06 RIGGING AND HOISTING

A. Provide all rigging and hoisting necessary for the installation of the materials and equipment provided under this Division of work.

3.07 TESTING OF SYSTEMS

A. All systems fabricated on site shall be tested by the Contractor. Testing shall include the provision of all necessary equipment, labor, and fluids.

B. Notify the Design Professional and other inspection authorities at least 48 hours before the scheduled test, or sampling time.

C. Control devices, instrumentation, and similar items not designed to withstand the test pressures shall be removed, or otherwise protected prior to testing the systems.

D. All plates, polished, and bronzed surfaces shall be cleaned and polished.

E. Valves, faucets, automatic valves, etc., shall be properly adjusted and shall be quiet operating.

3.08 TRANSPORTATION AND HANDLING

A. Transport and handle all materials and equipment in accordance with the manufacturer’s directions.

END OF SECTION

SECTION 21 05 00
COMMON WORK RESULTS FOR FIRE SUPPRESSION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes pipe, fittings, valves, and connections for sprinkler systems.

1.02 SUBMITTALS

A. Submit in accordance with the requirements of Division 1, Section 21 00 50, and this section.

B. Shop Drawings: Indicate pipe materials used, jointing methods, supports, floor and wall penetration seals. Indicate installation, layout, weights, mounting and support details, and piping connections.

C. Product Data: Submit manufacturer's catalogue information. Indicate valve data and ratings.

D. Project Record Documents: Record actual locations of components and tag numbering.

E. Operation and Maintenance Data: Submit spare parts lists.

1.03 QUALITY ASSURANCE

A. Perform Work in accordance with NFPA 13 standard.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle in accordance with the requirements of Division 1, Section 21 00 50, and this Section

B. Deliver and store valves in shipping containers, with labeling in place.

C. Furnish cast iron and steel valves with temporary protective coating.

D. Furnish temporary end caps and closures on piping and fittings. Maintain in place until installation.

PART 2 PRODUCTS

2.01 ABOVE GROUND PIPING

A. Steel Pipe: ASTM A135/135M UL listed, threadable, light wall; or ASME B36.10 Schedule 10 black.

1. Steel Fittings: ASME B16.9, wrought steel, butt welded.
2. Cast Iron Fittings: ASME B16.1, flanges and flanged fittings.
3. Malleable Iron Fittings: ASME B16.3, threaded fittings. Mechanical Grooved Couplings: Malleable iron housing clamps to engage and lock, "C" shaped elastomeric sealing gasket, steel bolts, nuts, and washers; galvanized for galvanized pipe.
4. Mechanical Formed Fittings: Carbon-steel housing with integral pipe stop and O-ring pocked and O-ring uniformly compressed into permanent mechanical engagement onto pipe.
5. Mechanical Grooved Couplings: Malleable iron housing clamps to engage and lock, "C" shaped composition sealing gasket, steel bolts, nuts, and washers; galvanized for galvanized pipe.

2.02 PIPE HANGERS AND SUPPORTS

A. Conform to NFPA 13 and / or NFPA 14.

B. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.

C. Hangers for Pipe Sizes 2 inch and Over: Carbon steel, adjustable, clevis.

D. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.

E. Vertical Support: Steel riser clamp.

F. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

G. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

PART 3 EXECUTION

3.01 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and foreign material, from inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.02 INSTALLATION

A. Install piping in accordance with NFPA 13 for sprinkler systems, NFPA 14 for standpipe and hose systems, and NFPA 24 for service mains.

B. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.

C. Install piping to conserve building space, to not interfere with use of space and other work.

D. Group piping whenever practical at common elevations.

E. Install pipe sleeve at piping penetrations through footings, partitions, walls, and floors. Seal pipe and sleeve penetrations to maintain fire resistance equivalent to fire separation. Where penetration is in exterior wall, or foundation, provide Link-Seal between pipe and sleeve.

F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

G. Pipe Hangers and Supports:
1. Install in accordance with NFPA 13.
2. Install hangers to with minimum 1/2 inch space between finished covering and adjacent work.
3. Place hangers within 12 inches of each horizontal elbow.
4. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
5. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
6. Where installing several pipes in parallel and at same elevation, provide multiple or trapeze hangers.
7. Prime coat exposed steel hangers and supports.
8. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

H. Slope piping and arrange systems to drain at low points. Install eccentric reducers to eliminate water traps at pipe size changes.

I. Prepare pipe, fittings, supports, and accessories for finish painting. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

J. Do not penetrate building structural members unless indicated, and then, only with written permission of the structural engineer.

K. Where more than one piping system material is specified, install compatible system components and joints. Install flanges, union, and couplings at locations requiring servicing.

L. Die cut threaded joints with full cut standard taper pipe threads with red lead and linseed oil or other non-toxic joint compound applied to male threads only.

M. Install valves with stems in, or above, an horizontal plane passing through the center of the valve.

N. Install drain valves at main shut-off valves, low points of piping and at locations required by applicable standards.

O. Where inserts are omitted, drill through concrete slab from below and install through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

3.03 INTERFACE WITH OTHER PRODUCTS

A. Inserts:
1. Install inserts for placement in concrete forms.
2. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
3. Install hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

3.04 CLEANING

A. Clean entire system after other construction is complete. Flush interior of piping in accordance with NFPA standards and other applicable standards to insure proper system operation.

END OF SECTION

SECTION 21 13 13
WET-PIPE SPRINKLER SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes wet-pipe sprinkler system, system design, installation, and certification.

B. The work includes complete design and installation of the entire wet-pipe sprinkler system required for the project.
   1. Locations of piping and sprinklers shown on the plans are for reference only. Changes in location (from the layout shown on the plans) shall be communicated to the Architect at the earliest possible time. Refer to the plans and specifications for limitations regarding relocation of piping and sprinklers.
   2. The Contractor shall design the system in accordance with NFPA 13, and all other applicable codes and standards.
   3. The Contractor shall obtain approval of the Authorities Having Jurisdiction as a part of his work for the project.

1.02 SYSTEM DESCRIPTION

A. System shall provide coverage for the work areas as shown on the plans, or as otherwise required by codes and standards.

B. Provide hydraulically designed system to NFPA 13 for the hazard group and occupancy requirements required based on the information shown on the plans, or presented elsewhere in the specifications. It is the Contractor's responsibility to determine the level of coverage that is required.

C. Determine volume and pressure of incoming water supply from water flow test data. The calculated available flow is 500 gpm with a residual pressure of 49 psig at the indicated connection point to the utility piping system. Final design to be approved by the Authority Having Jurisdiction shall be based on actual flow test information. If this information is not provided as a part of the bid documents, the Contractor shall include the price of providing the required flow tests in his base bid.

D. Interface system with building fire alarm system.

E. Provide fire department connections as required by the Authority Having Jurisdiction.

1.03 COORDINATION

A. Place pipe runs in coordination with the other work of the project. The Fire Protection Contractor shall review the work of all other trades, in detail, before he lays his system out for hydraulic calculations. As necessary, and in conjunction with the other trades, provide ¼ inch scale drawings to insure that all trades work will fit in the available spaces.

1.04 SUBMITTALS

A. Submit in accordance with the requirements of Division 1, Section 21 00 50, and this section.

B. Shop Drawings: Indicate layout of finished ceiling areas indicating sprinkler locations coordinated with ceiling installation. Indicate detailed pipe layout, hangers and supports, sprinklers, components and accessories. Indicate system controls.

C. Product Data: Submit data on sprinklers, valves, and specialties, including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.

D. Design Data: Submit design calculations; signed and sealed by a registered professional engineer (if required by the AHJ).

E. Project Record Documents: Record actual locations of sprinklers and piping as installed in the project. Indicate drain and test locations.

F. Operation and Maintenance Data: Submit components of system, servicing requirements, record drawings, inspection data, replacement part numbers and availability, and location and numbers of service depot.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with NFPA 13.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle in accordance with the requirements of Division 1, Section 21 00 50, and this Section.

B. Store products in shipping containers until installation.

C. Furnish piping with temporary inlet and outlet caps until installation.

1.07 EXTRA MATERIALS

A. Furnish extra sprinklers under provisions of NFPA 13.

B. Furnish suitable wrenches for each sprinkler type.

C. Furnish metal storage cabinet in location coordinated in the field with the Owner.

PART 2 PRODUCTS

A. Furnish extra sprinklers under provisions of NFPA 13.

B. Furnish suitable wrenches for each sprinkler type.

C. Furnish metal storage cabinet in location coordinated in the field with the Owner.

2.02 PRESSURE MAINTENANCE PUMP

A. Type: Close coupled motor and positive displacement pump unit.

B. Construction: Bronze with stainless steel shafts, carbon bearings.

C. Motor: Open drip proof, permanently lubricated.

D. Accessories: Include flexible hose connections, inlet strainer, relief valve, steel mounting plate.

E. Operation: Automatic with pressure switch actuation.

2.03 PIPING SPECIALTIES

A. Wet Pipe Sprinkler Alarm Valve: Check type valve with divided seat ring, rubber faced clapper to automatically actuate water motor alarm and electric alarm, with pressure retard chamber and variable pressure trim; with test and drain valve.

B. Electric Alarm: Electrically operated chrome plated gong with pressure alarm switch.

C. Water Flow Switch: Vane type switch for mounting horizontal or vertical, with two contacts; rated 10 amp at 125 volt AC and 2.5 amp at 24 volt DC.

D. Fire Department Connections:
1. Type: Flush mounted wall type with chrome plated finish.
2. Outlets: Two-way with fire department thread size. Threaded dust-cap and chain of matching material and finish.
3. Drain: 3/4 inch automatic drip, outside.
4. Label: "Sprinkler - Fire Department Connection".

2.04 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Electrical Characteristics: Coordinate with information shown and specified for the electrical work for the project.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with NFPA 13.

B. Install buried shut-off valves in valve box. Furnish post indicator.

C. Install approved back-flow preventer assembly at sprinkler system water source connection.

D. Locate fire department connection with sufficient clearance from walls, obstructions, or adjacent Siamese connectors to allow full swing of fire department wrench handle.

E. Locate outside alarm-gong on building wall at a location to be determined in the field and coordinated with the AHJ.

F. Place pipe runs in coordination with the other work of the project. The Fire Protection Contractor shall review the work of all other trades, in detail, before he lays his system out for hydraulic calculations. As necessary, and in conjunction with the other trades, provide ¼ inch scale drawings to insure that all trades work will fit in the available spaces.

G. Unless specifically noted to the contrary, it is intended that all piping be concealed above finished ceilings or within walls and chases.

H. Center sprinklers in two directions in ceiling tile (install piping offsets as necessary to achieve this layout).

I. Install and connect to fire pump system in accordance with NFPA 13.

J. Install guards on exposed sprinklers in service type areas.

K. Hydrostatically test entire system.

L. Require test be witnessed by Authority having jurisdiction.

3.02 INTERFACE WITH OTHER PRODUCTS

A. Verify signal devices are installed and connected to fire alarm system.

3.03 CLEANING

A. Flush entire piping system of foreign matter. Follow recommendations in all applicable standards.

3.04 PROTECTION OF INSTALLED CONSTRUCTION

A. Apply masking tape or paper cover to protect finished components that were installed before painting. Remove after painting. Insure completed installation conforms to the requirements of NFPA 13 and the AHJ.

END OF SECTION

DIVISION 22 00 00
PLUMBING
TABLE OF CONTENTS

END OF SECTION

SECTION 22 00 50
GENERAL PLUMBING REQUIREMENTS

CONTENTS

PART 1 GENERAL

1.01 APPLICABLE STANDARDS

A. Refer to specific specification sections for reference standard that are applied in this specification.

B. Where referenced standards and code requirements both apply, the more stringent requirement shall be met.

1.02 COORDINATION

A. Arrange with other Trades for the provision of all chases, slots, and openings necessary for the proper installation of the Plumbing Work.

B. Coordinate the installation of all required supporting devices.

C. Set sleeves in poured concrete construction and other structural components as they are constructed.

D. Where electrical connections are required, confirm available electrical characteristics with the project Electrical Contractor before item is ordered.

E. Where connections to Site Services are required, confirm location and elevation of same in the field before proceeding with the layout of the building systems.

1.03 DEFINITIONS

A. “Code”, “Regulation”, “Ordinance”, “Law”, and “Rule” are used interchangeably in this Specification to mean requirements of all authorities (local, State, Federal, or other) which may have jurisdiction over the construction of the work. Where one is used, all are implied.

B. “Concealed Exterior Installations” refers to exterior Plumbing work that is protected from weather conditions and contact by building components, but is exposed to outdoor ambient temperatures.

C. “Concealed Interior Installations” refers to interior Plumbing work that is concealed from physical contact by building components when the project is complete.

D. “Exposed Exterior Installations” refers to exterior Plumbing work that is exposed to exterior ambient conditions and not protected from contact by permanent building components.

E. “Exposed Interior Installations” refers to interior Plumbing work that is exposed to view in the final construction.

F. “Finished Spaces” are spaces that are generally accessible to the building staff and general public.

1.04 PROJECT RECORD DOCUMENTS

A. Provide in accordance with the requirements of Division 1 and other portions of this Division.

B. Maintain a “clean” set of project drawings for the sole purpose of recording deviations from the design. This set of drawings shall be maintained at the project site, with all modifications carefully marked-up as the work progresses.

C. This set of drawings shall show all work as actually installed with accurate vertical and horizontal measurements of concealed and buried work.

D. This set of Project Record Documents shall be certified as accurate by the Contractor and turned over to the Owner for future reference.

1.05 PROJECT / SITE CONDITIONS

A. Visit the project site before bidding to determine the actual existing conditions imposed on the construction of the work. The Contractor retains sole responsibility for interpreting the impact of existing conditions on his work.

1.06 QUALITY CONTROL

A. All work shall be performed by Contractors skilled in the work required with a minimum of three (3) years experience.

B. All materials shall be supplied by manufacturers having a minimum of three (3) years experience in the production of the item provided.

1.07 REGULATORY REQUIREMENTS

A. All work on this project shall be performed in accordance with all applicable codes, standards, and references.

B. Applicable Codes: All references to codes, specifications, and standards in the specifications sections and on the drawings shall mean and are intended to be the edition, amendment, or revision of such standard in effect at the date of these contract documents.

C. Obtain and pay for all required permits and inspections. Obtain certificates of such inspections, and provide copies of same to the Design Professional.

1.08 RELATED DOCUMENTS

A. The general conditions of the Contract, including Conditions of the Contract and Division 1 of the Specification.

B. Construction Drawings, all Addenda, Bulletins and Change Orders.

1.09 RESPONSIBILITY

A. Submission of a bid is considered evidence that the Contractor has visited the site, examined the Drawings and Specifications of **all Trades**, and has fully informed himself as to all Project conditions.

B. Submission of a bid implies the Contractor is proficient, experienced and knowledgeable of all regulations and conditions which may affect any portion of the Work included in his bid.

C. The Contractor is responsible to comply with the requirements of **all** of the construction documents provided for this project.

D. Where clarification is required with regard to which trade is responsible for a particular item of work, such clarification is to be requested of the design professional, in writing, in a timely manner.

1.10 SCOPE OF WORK

A. These specifications and the accompanying drawings describe the furnishing and installation of all material, equipment, supplies, labor and supervision required for the complete performance of all operations relating to the Plumbing Trades Work.

B. The work provided shall be complete in all respects and shall result in satisfactorily operating systems that have been approved for occupancy by the authority(ies) having jurisdiction.

C. This project consists generally of an addition to, and renovation of, an existing county jail facility. The jail shall remain in operation during the entire course of construction. Special security procedures will be implemented at the discretion of Sheriff staff which may cause the Contractor loss of work efficiency. No claim for extra compensation will be allowed for this condition.

D. Specific types of work to be accomplished under the Plumbing trades work include, but are not limited to:
1. Identification for Plumbing Piping and Equipment.
2. Plumbing Insulation.
3. Facility Water Distribution.
4. Facility Sanitary, Waste, Vent, and Storm Water Drainage Systems.
5. Security Plumbing Fixtures.

1.11 STORAGE AND PROTECTION

A. Refer to Division 1.

B. Store all materials and equipment to protect against damage of all types.

C. Provide appropriate barriers to maintain safe construction areas.

1.12 SUBMITTALS

A. Submittals for review, except color samples, shall be made to the engineer in pdf electronic format. The engineer will add his review stamp to the electronic format and return it to the contractor for his records.

B. Submittals for review shall be made prior to the purchase of materials. Submittal procedures shall be in accordance with Division 1 of these specifications, and the following:

1. Submit copes for distribution with product data grouped to include complete submittals of related system, products, and accessories in a single submittal. Each submittal shall be clearly marked to indicate equipment number, specification section, etc., which the submittal describes.
2. Mark dimensions and values in units to match those specified.
3. Data must include job name, dimensions, capacities, construction characteristics, and installation instruction. Where applicable, submittal data must also include metal gauges, frame types, finish fan diameters, bearing types, lubrication system, motor types, insulation, velocities, pressure drops, pump curves, coil areas, filter types and areas, electrical characteristics, wiring and piping diagrams, and accessories required.
4. Submittals must be thoroughly checked by the Contractor and must contain his stamp of approval before being sent to the Design Professional for review.
5. Submittals not conforming to the above requirements will be returned without review.

C. The Design Professional will **review** shop drawings for general conformance to the construction documents. This **review** is provided as a convenience to the Contractor by the Design Professional. The Design Professional will **review** submitted information with reasonable care, however, no responsibility accrues to the Design Professional for errors of omission in the **review** of submitted materials. The Contractor retains complete, sole responsibility for providing materials and equipment that are in conformance to the construction documents.

PART 2 MATERIALS

2.01 ACCESS PANELS

A. Provide access panels for all equipment which must be located in “inaccessible” locations (above fixed ceilings, behind walls, etc.). Access panels shall conform to the requirements of the General Trades Specifications. Turn panels over to the General Trades Contractor for installation. Provide fire rated access panel where such penetrations are through fire rated assemblies.

2.02 SUBSTITUTIONS

A. In the Drawings and Specifications materials and equipment are generally noted as "based on". The layout and arrangement of systems and equipment for this project are based on the size and arrangement of these manufacturers.

B. For major items of equipment, other manufacturers may be listed who manufacture equipment deemed to be "equal" by the Engineer. These items may be used at the Contractor's option. It remains the Contractor's responsibility to determine which item manufactured by the "alternate" company is equivalent to the item listed as "based on", and to obtain the approval of the Engineer for all such "substitutions".

C. In all cases where items other than those upon which the design is based are used, it is the Contractor's responsibility to determine the impact of providing "alternate" equipment. Where "alternate" equipment is provided, the Contractor shall pay all charges, including design fees and charges by other Contractor's, that may be necessary to accommodate the installation of the "alternate" equipment or materials.

PART 3 EXECUTION

3.01 CUTTING AND PATCHING

A. Perform in accordance with the requirements of Division 1.

B. Perform, or cause to be performed, all cutting and patching necessary for the installation of the work, unless specifically noted to the contrary elsewhere.

C. No structural members shall be cut without written authorization from the Design Professional. All such cutting, when authorized, shall be done in strict accordance with the instructions of the Design Professional.

D. In general, roof and wall openings required for Plumbing equipment and systems shall be provided by this Contractor. The size and location of these openings shall be the responsibility of this Contractor.

3.02 FINAL ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.03 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean interior and exterior surfaces exposed to view. Vacuum carpeted and soft surfaces where materials have been deposited due to the work of this Contactor.

C. Clean debris from site.

D. Remove waste and surplus materials, rubbish, and construction facilities from the site.

E. Fixtures and equipment: All fixtures and equipment shall be cleaned. Clean floor drains.

F. All plates, polished, and bronzed surfaces shall be cleaned and polished.

3.04 PROGRESS CLEANING

A. Maintain work areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition at all times.

B. All openings in piping systems shall be protected during construction to prevent the entrance of foreign materials.

3.05 REMOVAL OF TEMPORARY UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary equipment, facilities, and materials prior to Substantial Completion.

B. Clean and repair damage caused by installation or use of temporary work.

3.06 TESTING OF SYSTEMS

A. All systems fabricated on site shall be tested by the Contractor. Testing shall include the provision of all necessary equipment, labor, and fluids.

B. Notify the Design Professional and other inspection authorities at least 48 hours before the scheduled test, or sampling time.

C. Control devices, instrumentation, and similar items not designed to withstand the test pressures shall be removed, or otherwise protected prior to testing the systems.

D. Valves, faucets, automatic valves, etc., shall be properly adjusted and shall be quiet operating.

3.07 TRANSPORTATION AND HANDLING

A. Transport and handle all materials and equipment in accordance with the manufacturer's directions.

END OF SECTION

SECTION 22 05 53
IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Nameplates.
2. Tags.
3. Stencils.
4. Pipe markers.
5. Ceiling tacks.
6. Labels.

1.02 SUBMITTALS

A. Submit in accordance with the requirements of Division 1, Section 22 00 50, and this section.

B. Product Data: Submit manufacturers catalog literature for each product required.

C. Shop Drawings: Submit list of wording, symbols, letter size, and color coding for mechanical identification and valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.

D. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.

E. Project Record Documents: Record actual locations of tagged valves; include valve tag numbers.

1.03 QUALITY ASSURANCE

A. Conform to ASME A13.1 for color scheme for identification of piping systems and accessories.

1.04 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 PRODUCTS

2.01 NAMEPLATES

A. Product Description: Laminated three-layer plastic with engraved black letters on light contrasting background color.

2.02 TAGS

A. Plastic Tags:
1. Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inches diameter.

B. Information Tags:
1. Clear plastic with printed "Danger," "Caution," or "Warning" and message; size 3-1/4 x 5-5/8 inches with grommet and self-locking nylon ties.

C. Tag Chart: Typewritten letter size list of applied tags and location in anodized aluminum frame.

2.03 STENCILS

A. Stencils: With clean cut symbols and letters of following size:
1. Equipment: 1-3/4 inches high letters.

B. Stencil Paint: Semi-gloss enamel; colors and lettering size conforming to ASME A13.1.

2.04 PIPE MARKERS

A. Color and Lettering: Conform to ASME A13.1.

B. Plastic Pipe Markers:
1. Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener.

C. Plastic Underground Pipe Markers:
1. Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.05 CEILING TACKS

A. Description: Steel with 3/4 inch diameter color-coded head.

B. Color code as follows:
1. Plumbing valves: Green.

2.06 LABELS

A. Description: Laminated Mylar, size 1.9 x 0.75 inches, adhesive backed with printed identification.

PART 3 EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION

A. Install identifying devices after completion of coverings and painting.

B. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive.

C. Install labels with sufficient adhesive for permanent adhesion and seal with clear lacquer. For unfinished canvas covering, apply paint primer before applying labels.

D. Install tags using corrosion resistant chain. Number tags in sequence as approved by the Owner.

E. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.

F. Identify water heaters, pumps, tanks, and water treatment devices with stencil painting. Identify in-line pumps and other small devices with tags.

G. Identify control panels and major control components outside panels with plastic nameplates.

H. Identify valves in main and branch piping with tags.

I. Identify piping, concealed or exposed, with plastic pipe markers. Use tags on piping 3/4 inch diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 10 feet on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.

J. Provide ceiling tacks to locate valves above T-bar type panel ceilings. Locate in corner of panel closest to equipment.

END OF SECTION

SECTION 22 07 00
PLUMBING INSULATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Plumbing piping insulation, jackets and accessories.
2. Plumbing equipment insulation, jackets and accessories.

1.02 SUBMITTALS

A. Submit in accordance with the requirements of Division 1, Section 22 00 50, and this section.

B. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service, and location.

C. Manufacturer's Installation Instructions: Submit manufacturers published literature indicating proper installation procedures.

1.03 QUALITY ASSURANCE

A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding 50 in accordance with ASTM E84.

B. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.

C. Factory fabricated fitting covers manufactured in accordance with ASTM C450.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle in accordance with the requirements of Division 1, Section 22 00 50, and this Section.

B. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

C. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.

B. Maintain recommended temperature for the time period recommended by the manufacturer.

1.06 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 PRODUCTS

2.01 PIPE INSULATION

A. TYPE P-1: ASTM C547, molded glass fiber pipe insulation.
   1. Thermal Conductivity: 0.23 at 75 degrees F.
   2. Operating Temperature Range: 0 to 850 degrees F.
   3. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied reinforced foil kraft with self-sealing adhesive joints.
   4. Jacket Temperature Limit: minus 20 to 150 degrees F.

2.02 PIPE INSULATION JACKETS – NOT USED

2.03 PIPE INSULATION ACCESSORIES

A. Vapor Retarder Lap Adhesive: Compatible with insulation.

B. Covering Adhesive Mastic: Compatible with insulation.

C. Piping 1-1/2 inches diameter and smaller: Galvanized steel insulation protection shield. MSS SP-69, Type 40. Length: Based on pipe size and insulation thickness.

D. Piping 2 inches diameter and larger: Wood insulation saddle, hard maple. Inserts length: not less than 6 inches long, matching thickness and contour of adjoining insulation.

E. Closed Cell Elastomeric Insulation Pipe Hanger: Polyurethane insert with aluminum single piece construction with self adhesive closure. Thickness to match pipe insulation.

F. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.

G. Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement: ASTM C449/C449M.

H. Insulating Cement: ASTM C195; hydraulic setting on mineral wool.

I. Adhesives: Compatible with insulation.

2.04 EQUIPMENT INSULATION – NOT USED

2.05 EQUIPMENT INSULATION JACKETS – NOT USED

2.06 EQUIPMENT INSULATION ACCESSORIES – NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify piping has been tested before applying insulation materials.

B. Verify surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION - PIPING SYSTEMS

A. Piping Exposed to View in Finished Spaces: Locate insulation and cover seams in least visible locations.

B. Continue insulation through penetrations of building assemblies or portions of assemblies having fire resistance rating of one hour or less. Provide intumescent fire-stopping when continuing insulation through fire rated assembly. Finish at supports, protrusions, and interruptions.

C. Piping Systems Conveying Fluids Below Ambient Temperature:
1. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
2. Furnish factory-applied or field-applied vapor retarder jackets. Secure factory-applied jackets with pressure sensitive adhesive self-sealing longitudinal laps and butt strips. Secure field-applied jackets with outward clinch expanding staples and seal staple penetrations with vapor retarder mastic.
3. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor retarder adhesive or PVC fitting covers.

D. Hot Piping Systems degrees F:
1. Furnish factory-applied or field-applied standard jackets. Secure with outward clinch expanding staples or pressure sensitive adhesive system on standard factory-applied jacket and butt strips or both.
2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
3. Insulate flanges and unions at equipment.

E. Inserts and Shields:
1. Piping Conveying Fluids Below Ambient Temperature: Install galvanized steel shield between pipe hanger and insulation.

F. Closed Cell Elastomeric Insulation:
1. Push insulation on to piping.
2. Miter joints at elbows.

3. Seal seams and butt joints with manufacturer's recommended adhesive.
4. When application requires multiple layers, apply with joints staggered.
5. Insulate fittings and valves with insulation of like material and thickness as adjacent pipe.

G. Heat Traced Piping: Insulate fittings, joints, and valves with insulation of like material, thickness, and finish as adjoining pipe. Size large enough to enclose pipe and heat tracer.

3.03 INSTALLATION – EQUIPMENT – NOT USED

3.04 SCHEDULES

A. Water Supply Services Piping Insulation Schedule:

PIPING SYSTEM	INSULATION TYPE	PIPE SIZE (inches)	INSULATION THICKNESS (inches)
Domestic Water	P-1	1-1/4 and smaller 1-1/2 and larger	½ 1

B. Drainage Services Piping Insulation Schedule:

END OF SECTION

SECTION 22 11 00
FACILITY WATER DISTRIBUTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Domestic water piping, above grade.
2. Unions and flanges.
3. Valves.
4. Pipe hangers and supports.

1.02 SUBMITTALS

A. Submit in accordance with the requirements of Division 1, Section 22 00 50, and this section.

B. Product Data:
1. Piping: Submit data on pipe materials, fittings, and accessories. Submit manufacturer's catalog information.
2. Valves: Submit manufacturers catalog information with valve data and ratings for each service.
3. Hangers and Supports: Submit manufacturers catalog information including load capacity.
4. Domestic Water Specialties: Submit manufacturers catalog information, component sizes, rough-in requirements, service sizes, and finishes.
5. Pumps: Submit pump type, capacity, certified pump curves showing pump performance characteristics with pump and system operating point plotted. Include NPSH curve when applicable. Include electrical characteristics and connection requirements.

C. Manufacturer's Installation Instructions: Submit installation instructions for pumps, valves and accessories.

D. Project Record Documents: Record actual locations of piping, valves, and equipment.

E. Operation and Maintenance Data: Submit spare parts list, exploded assembly views and recommended maintenance intervals.

1.03 QUALITY ASSURANCE

A. For drinking water service, provide valves complying with NSF 61.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle in accordance with the requirements of Division 1, Section 22 00 50, and this Section.

B. Accept valves and equipment on site in shipping containers with labeling in place. Inspect for damage.

C. Provide temporary protective coating on cast iron and steel valves.

D. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

E. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

1.05 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 PRODUCTS

2.01 DOMESTIC WATER PIPING, ABOVE GRADE

A. Copper Tubing: ASTM B88, Type L, hard drawn.
   1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
   2. Joints: ASTM B32, Alloy Grade Sb5 tin-antimony, or Alloy Grade Sn95 tin-silver, lead free solder.

2.02 UNIONS AND FLANGES

A. Unions for Pipe 2 inches and Smaller:
   1. Ferrous Piping: Class 150, malleable iron, threaded.
   2. Copper Piping: Class 150, bronze unions with soldered.
   3. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.
   4. PVC Piping: PVC.

B. Flanges for Pipe 2-1/2 inches and Larger:
   1. Ferrous Piping: Class 150, forged steel, slip-on flanges.
   2. Copper Piping: Class 150, slip-on bronze flanges.
   3. PVC Piping: PVC flanges.
   4. Gaskets: 1/16 inch thick preformed neoprene gaskets.

C. PVC Pipe Materials: For connections to equipment and valves with threaded connections, furnish solvent-weld socket to screwed joint adapters and unions, or ASTM D2464, Schedule 80, threaded, PVC pipe.

2.03 VALVES

A. GATE VALVES
   1. 2 inches and Smaller: MSS SP 80, Class 125, bronze body, bronze trim, threaded bonnet, non-rising stem, hand-wheel, inside screw with back-seating stem, solid wedge disc, alloy seat rings, solder ends.

2. 2-1/2 inches and Larger: MSS SP 70, Class 125, cast iron body, bronze trim, bolted bonnet, rising stem, hand-wheel, outside screw and yoke, solid wedge disc with bronze seat rings, flanged ends. Furnish chain-wheel operators for valves 6 inches and larger mounted over 8 feet above floor.

B. GLOBE VALVES
1. 2 inches and Smaller: MSS SP 80, Class 125, bronze body, bronze trim, threaded bonnet, hand wheel, Buna-N composition disc, solder ends.
2. 2-1/2 inches and Larger: MSS SP 85, Class 125, cast iron body, bronze trim, hand wheel, outside screw and yoke, flanged ends. Furnish chain-wheel operators for valves 6 inches and larger mounted over 8 feet above floor.

C. BALL VALVES
1. 2-1/2 inches and Smaller: MSS SP 110, 400 psi WOG, two piece bronze body, chrome plated brass ball, full port, Teflon seats, blow-out proof stem, solder ends with union, lever handle.

D. CHECK VALVES
1. Horizontal Swing Check Valves:
   a. 2 inches and Smaller: MSS SP 80, Class 150, bronze body and cap, bronze seat, Buna-N disc, solder ends.
   b. 2-1/2 inches and Larger: MSS SP 71, Class 125, cast iron body, bolted cap, bronze or cast iron disc, renewable disc seal and seat, flanged ends.

2.04 PIPE HANGERS AND SUPPORTS

A. Plumbing Piping: Conform to ASME B31.9.

B. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.

C. Hangers for Cold Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.

D. Hangers for Hot Pipe, Sizes 2 to 4 inches: Carbon steel, adjustable, clevis.

E. Multiple or Trapeze Hangers: Steel channels with welded supports or spacers and hanger rods.

F. Vertical Support: Steel riser clamp.

G. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

H. Copper Pipe Support: Carbon steel ring, adjustable, copper plate.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

3.03 INSTALLATION - HANGERS AND SUPPORTS

A. Inserts:
1. Provide inserts for placement in concrete forms.
2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe 4 inches and larger.
4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

B. Pipe Hangers and Supports:
1. Install in accordance with ASME B31.9.
2. Support horizontal piping as schedule.
3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
4. Place hangers within 12 inches of each horizontal elbow.
5. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
6. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
7. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.
8. Provide copper plated hangers and supports for copper piping where piping is in direct contact with pipe.
9. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
10. Provide hangers adjacent to motor driven equipment with vibration isolation.

3.04 INSTALLATION - ABOVE GROUND PIPING

A. Install non-conducting dielectric connections wherever jointing dissimilar metals.

B. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

C. Install piping to maintain headroom without interfering with use of space or taking more space than necessary.

D. Group piping whenever practical at common elevations.

E. Slope piping and arrange systems to drain at low points.

F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.

H. Where items requiring maintenance have been installed behind inaccessible surfaces (walls, hard ceilings, etc.), provide appropriately sized access panels. Access panel shall be fire rated where they are installed in fire rated assemblies.

I. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

J. Provide support for utility meters in accordance with requirements of utility companies.

K. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting.

L. Install domestic water piping in accordance with ASME B31.9.

M. Sleeve pipes passing through partitions, walls and floors.

N. Install fire-stopping at penetrations through fire rated construction.

O. Install unions downstream of valves and at equipment or apparatus connections.

P. Install valves with stems in, or above, an horizontal plane passing through the center of the valve.

Q. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.

R. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

S. Install ball valves for throttling, bypass, or manual flow control services.

T. Install potable water protection devices on plumbing lines where contamination of domestic water may occur. include on boiler feed water lines, janitor rooms, fire sprinkler systems, premise isolation, irrigation systems, flush valves, interior, and exterior hose bibs, and all other similar locations.

U. Pipe relief from valves, back-flow preventers and drains to nearest floor drain.

V. Test backflow preventers in accordance with ASSE 5013.

W. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping wherever quick closing valves might cause water hammer.

3.05 FIELD QUALITY CONTROL

A. Test domestic water piping system in accordance with applicable code.

3.06 CLEANING

A. Prior to starting work, verify system is complete, flushed and clean.

B. Verify pH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).

C. Inject disinfectant, free chlorine in liquid, powder and tablet or gas form, throughout system to obtain residual from 50 to 80 mg/L.

D. Bleed water from outlets to obtain distribution and test for disinfectant residual at minimum 15 percent of outlets.

E. Maintain disinfectant in system for 24 hours.

F. When final disinfectant residual tests less than 25 mg/L, repeat treatment.

G. Flush disinfectant from system until residual concentration is equal to incoming water or 1.0 mg/L.

H. Take samples no sooner than 24 hours after flushing, from 5 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

3.07 SCHEDULES

A. Pipe Hanger Spacing:

PIPE MATERIAL	MAXIMUM HANGER SPACING Feet	HANGER ROD DIAMETER Inches
Copper Tube, 1-1/4 inches and smaller	6	1/2
Copper Tube, 1-1/2 inches and larger	10	1/2

END OF SECTION

SECTION 22 13 00
FACILITY WASTE AND VENT PIPING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Piping buried within 5 feet of building.
2. Piping above grade.
3. Unions and flanges.
4. Pipe hangers and supports.
5. Floor drains.
6. Cleanouts.

1.02 SUBMITTALS

A. Submit in accordance with the requirements of Division 1, Section 22 00 50, and this section.

B. Shop Drawings: Indicate dimensions, weights, and placement of openings and holes for sewage-ejectors, and manholes.

C. Product Data:
1. Piping: Submit data on pipe materials, fittings, and accessories. Submit manufacturers catalog information.
2. Hangers and Supports: Submit manufacturers catalog information including load capacity.
3. Sanitary Drainage Specialties: Submit manufacturers catalog information, component sizes, rough-in requirements, service sizes, and finishes.

D. Manufacturer's Installation Instructions: Submit installation instructions for material and equipment.

E. Project Record Documents: Record actual locations of piping, drains, clean-outs, etc.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle in accordance with the requirements of Division 1, Section 22 00 50, and this Section

B. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

1.04 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 PRODUCTS

2.01 WASTE ANS VENT PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. PVC Pipe: ASTM D2729, polyvinyl chloride (PVC) material, bell and spigot solvent sealed ends.
   1. Fittings: PVC, ASTM D2729.
   2. Joints: ASTM D2855, solvent weld with ASTM D2564 solvent cement.

2.02 WASTE AND VENT PIPING, ABOVE GRADE

A. PVC Pipe: ASTM D2729, polyvinyl chloride (PVC) material.
   1. Fittings: ASTM D2729, PVC.
   2. Joints: ASTM D2855, solvent weld with ASTM D2564 solvent cement.

2.03 UNIONS AND COUPLINGS

A. Unions for Pipe 2 inches and Smaller:
   1. PVC Piping: PVC.

B. PVC Pipe Materials: For connections to equipment and valves with threaded connections, furnish solvent-weld socket to screwed joint adapters and unions, or ASTM D2464, Schedule 80, threaded, PVC pipe.

2.04 PIPE HANGERS AND SUPPORTS

A. Drain, Waste, and Vent: Conform to ASME B31.9.

B. Hangers for Pipe Sizes 1-1/4 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.

C. Hangers for Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.

D. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.

E. Vertical Support: Steel riser clamp.

F. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

2.05 FLOOR DRAINS

A. Floor Drain (FD-1): ASME A112.21.1; see plans for requirements.

2.06 CLEANOUTS

A. Exterior Surfaced Areas: Round cast nickel bronze access frame and non-skid cover.

B. Exterior Un-surfaced Areas: Line type with lacquered cast iron body and round epoxy coated cover with gasket.

C. Interior Finished Floor Areas: Lacquered cast iron body with anchor flange, threaded top assembly, and round scored cover with gasket in service areas and round depressed cover with gasket to accept floor finish in finished floor areas.

D. Interior Finished Wall Areas: Line type with lacquered cast iron body and round epoxy coated cover with gasket, and round stainless steel access cover secured with machine screw.

E. Interior Unfinished Accessible Areas: Calked or threaded type. Provide bolted stack cleanouts on vertical rainwater leaders.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

A. Ream pipe and tube ends. Remove burrs.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

3.03 INSTALLATION - HANGERS AND SUPPORTS

A. Inserts:
1. Provide inserts for placement in concrete forms.
2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe 4 inches and larger.
4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into, and grouted flush with slab.

B. Pipe Hangers and Supports:
1. Install in accordance with ASME B31.9.
2. Support horizontal piping as scheduled.
3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
4. Place hangers within 12 inches of each horizontal elbow.
5. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.

6. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
7. Where installing several pipes in parallel and at same elevation, provide multiple pipe hangers or trapeze hangers.
8. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

3.04 INSTALLATION - BURIED PIPING SYSTEMS

A. Verify connection to existing piping system size, location, and invert elevations are as indicated on Drawings.

B. Establish minimum separation from other services in accordance with code.

C. Remove scale and dirt on inside of piping before assembly.

D. Excavate pipe trench in accordance with site Civil specifications.

E. Place bedding material at trench bottom to provide uniform bedding for piping, level bedding materials in one continuous layer not exceeding 4 inches compacted depth; compact to 95 percent maximum density].

F. Install pipe on prepared bedding.

G. Route pipe in straight line.

H. Install plastic ribbon tape continuous over top of pipe, buried 6 inches below finish grade.

I. Pipe Cover and Backfilling:
1. Backfill trench in accordance with site Civil specifications.
2. Maintain optimum moisture content of fill material to attain required compaction density.
3. After hydrostatic test, evenly backfill entire trench width by hand placing backfill material and hand tamping in 4 inches compacted layers to 12 inches minimum cover over top of jacket. Compact to 95 percent maximum density.
4. Evenly and continuously backfill remaining trench depth in uniform layers with backfill material.
5. Do not use wheeled or tracked vehicles for tamping.

3.05 INSTALLATION - ABOVE GROUND PIPING

A. Establish invert elevations, slopes for drainage to 1/8 inch per foot minimum. Maintain gradients.

B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Provide clearances at cleanout for snaking drainage system.

C. Encase exterior cleanouts in concrete flush with grade.

D. Install floor cleanouts to be flush with finished floor.

E. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

F. Install piping to maintain headroom. Do not spread piping, conserve space.

G. Group piping whenever practical at common elevations.

H. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

I. Provide clearance in hangers and from structure and other equipment for installation of insulation.

J. Install piping penetrating roofed areas to maintain integrity of roof assembly.

K. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

L. Install bell and spigot pipe with bell end upstream.

M. Sleeve pipes passing through partitions, walls and floors.

N. Install fire-stopping at penetrations of fire rated assemblies, maintain assembly rating.

3.06 FIELD QUALITY CONTROL

A. Test sanitary waste and vent piping system in accordance with applicable code.

3.07 SCHEDULES

PIPE HANGER SPACING		
PIPE MATERIAL	MAXIMUM HANGER SPACING Feet	HANGER ROD DIAMETER Inches
PVC (All Sizes)	4	3/8

END OF SECTION

SECTION 22 45 00
SECURITY PLUMBING FIXTURES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Showers.

1.02 SUBMITTALS

A. Submit in accordance with the requirements of Division 1, Section 22 00 50, and this section.

B. Product Data: Submit catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

C. Manufacturer's Installation Instructions: Submit installation methods and procedures.

D. Operation and Maintenance Data: Submit fixture, trim, exploded view and replacement parts lists.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle in accordance with the requirements of Division 1, Section 22 00 50, and this Section

B. Accept fixtures on site in factory packaging. Inspect for damage.

C. Protect installed fixtures from damage from any cause.

1.04 WARRANTY

A. Furnish five year manufacturer warranty for security fixtures provided for this project.

PART 2 PRODUCTS

2.01 SHOWER, SURFACE MOUNTED, FRONT ACCESS (SSH-1)

A. Manufacturers
1. Willoughby, see plans for model number.
2. Bradley.
3. Acorn.
4. Metcraft.
5. Substitutions: Permitted in accordance with the requirements of Division 1, Section 22 00 50, and this section.

B. Shower panel to be 14 gauge type 304 stainless steel, polished to a #4 satin finish. Mounting frame to be 18 gauge galvanized steel.

C. Dual temperature pneumatic metering valve, non-adjustable, anti-suicide, penal shower head, anti-suicide push-button, recessed soap dish.

2.02 SHOWER, SURFACE MOUNTED, FRONT ACCESS, BARRIER FREE (SSH-1H)

A. Manufacturers
1. Willoughby, see plan for model number.
2. Bradley.
3. Acorn.
4. Metcraft.
5. Substitutions: Permitted in accordance with the requirements of Division 1, Section 22 00 50, and this section.

B. Shower panel to be 14 gauge type 304 stainless steel, polished to a #4 satin finish. Mounting frame to be 18 gauge galvanized steel.

C. Dual temperature pneumatic metering valve, (2) non-adjustable, anti-suicide, penal shower heads, (2) anti-suicide push-button, recessed soap dish.

D. Construction and mounting to comply with current barrier free requirements.

E. Provide ASSE 1070 tempering valve.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify walls and floor finishes are prepared and ready for installation of fixtures.

3.02 PREPARATION

A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures and as required by manufactures installation instructions.

3.03 INSTALLATION

A. Install each fixture with trap, easily removable for servicing and cleaning.

B. Install components level and plumb.

C. Install and secure fixtures in place with in accordance with manufacturers installation instructions.

D. Seal fixtures to wall and floor surfaces with security caulk, color to be selected.

3.04 ADJUSTING

A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

3.05 CLEANING

A. Clean plumbing fixtures and equipment.

3.06 PROTECTION OF INSTALLED CONSTRUCTION

A. Do not permit use of fixtures before final acceptance.

3.07 SSH-1

A. Insure that wall sleeve is flush and plumb with wall construction.

B. Adjust water supply to fixture to provide proper flow to shower head.

C. Mount shower head 6’-0” above finished floor.

D. Operating valves will be provided with unit, provide all necessary connections and accessories to complete properly operating installation.

3.08 SSH-1H

A. Insure that wall sleeve is flush and plumb with wall construction.

B. Adjust water supply to fixture to provide proper flow to shower heads.

C. Operating valves will be provided with unit, provide all necessary connections and accessories to complete properly operating installation.

D. Mounting height to comply with current barrier free requirements.

END OF SECTION

DIVISION 23 00 00
HVAC SYSTEMS
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END OF SECTION

SECTION 23 00 50
GENERAL HVAC REQUIREMENTS

CONTENTS

PART 1 GENERAL

1.01 APPLICABLE STANDARDS

A. Refer to specific specification sections for reference standard that are applied in this specification.

B. Where referenced standards and code requirements both apply, the more stringent requirement shall be met.

1.02 COORDINATION

A. Coordinate work with all other Trades before installation to eliminate conflicts over available space.

B. Arrange with other Trades for the provision of all chases, slots, and openings necessary for the proper installation of the Mechanical Work.

C. Coordinate the installation of all required supporting devices.

D. Set sleeves in poured concrete construction and other structural components as they are constructed.

E. Where electrical connections are required, confirm available electrical characteristics with the project Electrical Contractor before item is ordered.

F. Where connections to Site Services are required, confirm location and elevation of same in the field before proceeding with the layout of the building systems.

1.03 DEFINITIONS

A. “Code”, “Regulation”, “Ordinance”, “Law”, and “Rule” are used interchangeably in this Specification to mean requirements of all authorities (local, State, Federal, or other) which may have jurisdiction over the construction of the work. Where one is used, all are implied.

B. “Concealed Exterior Installations” refers to exterior mechanical work that is protected from weather conditions and contact by building components, but is exposed to outdoor ambient temperatures.

C. “Concealed Interior Installations” refers to interior mechanical work that is concealed from physical contact by building components when the project is complete.

D. “Exposed Exterior Installations” refers to exterior mechanical work that is exposed to exterior ambient conditions and not protected from contact by permanent building components.

E. “Exposed Interior Installations” refers to interior mechanical work that is exposed to view in the final construction.

F. "Finished Spaces" are spaces that are generally accessible to the building staff and general public.

1.04 PROJECT RECORD DOCUMENTS

A. Provide in accordance with the requirements of Division 1 and other portions of this Division.

B. Maintain a "clean" set of project drawings for the sole purpose of recording deviations from the design. This set of drawings shall be maintained at the project site, with all modifications carefully marked-up as the work progresses.

C. This set of drawings shall show all work as actually installed with accurate vertical and horizontal measurements of concealed and buried work.

D. This set of Project Record Documents shall be certified as accurate by the Contractor and turned over to the Owner for future reference.

E. Additionally, the Contractor shall provide the Record Drawings in AutoCAD format to the Owner for his use. The AutoCad data shall be updated to reflect all of the actual conditions of installation for the entire project. The project design drawings will be made available to the Contractor by the design Engineer in AutoCAD 2007.

1.05 PROJECT / SITE CONDITIONS

A. Visit the project site before bidding to determine the actual existing conditions imposed on the construction of the work. The Contractor retains sole responsibility for interpreting the impact of existing conditions on his work.

1.06 QUALITY CONTROL

A. All work shall be performed by Contractors skilled in the work required with a minimum of three (3) years experience.

B. All materials shall be supplied by manufacturers having a minimum of three (3) years experience in the production of the item provided.

1.07 REGULATORY REQUIREMENTS

A. All work on this project shall be performed in accordance with all applicable codes, standards, and references.

B. Applicable Codes: All references to codes, specifications, and standards in the specifications sections and on the drawings shall mean and are intended to be the edition, amendment, or revision of such standard in effect at the date of these contract documents.

C. Obtain and pay for all required permits and inspections. Obtain certificates of such inspections, and provide copies of same to the Design Professional.

1.08 RELATED DOCUMENTS

A. The general conditions of the Contract, including Conditions of the Contract and Division 1 of the Specification.

B. Construction Drawings, all Addenda, Bulletins and Change Orders.

1.09 RESPONSIBILITY

A. Submission of a bid is considered evidence that the Contractor has visited the site, examined the Drawings and Specifications of **all Trades**, and has fully informed himself as to all Project conditions.

B. Submission of a bid implies the Contractor is proficient, experienced and knowledgeable of all regulations and conditions which may affect any portion of the Work included in his bid.

C. The Contractor is responsible to comply with the requirements of **all** of the construction documents provided for this project.

D. Where clarification is required with regard to which trade is responsible for a particular item of work, such clarification is to be requested of the design professional, in writing, in a timely manner.

1.10 SCOPE OF WORK

A. These specifications and the accompanying drawings describe the furnishing and installation of all material, equipment, supplies, labor and supervision required for the complete performance of all operations relating to the Mechanical Trades Work.

B. The work provided shall be complete in all respects and shall result in satisfactorily operating systems that have been approved for occupancy by the authority(ies) having jurisdiction.

C. This project consists generally of a renovation of an existing county jail facility. The jail shall remain in operation during the entire course of construction. Special security procedures will be implemented at the discretion of Sheriff staff which may cause the Contractor loss of work efficiency. No claim for extra compensation will be allowed for this condition.

D. Specific types of work to be accomplished under the mechanical trades work include, but are not limited to:

1. 23 00 50 General HVAC Systems Requirements.
2. 23 05 53 Identification for HVAC Piping and Equipment.
3. 23 07 00 HVAC Insulation.
4. 23 31 00 HVAC Ducts and Casings.
5. 23 34 00 HVAC Fans.
6. 23 37 00 Air Outlets and Inlets.

1.11 STORAGE AND PROTECTION

A. Refer to Division 1.

B. Store all materials and equipment to protect against damage of all types.

C. Provide appropriate barriers to maintain safe construction areas.

1.12 SUBMITTALS

A. Submittals for review, except color samples, shall be made to the engineer in pdf electronic format. The engineer will add his review stamp to the electronic format and return it to the contractor for his records.

B. Submittals for review shall be made prior to the purchase of materials. Submittal procedures shall be in accordance with Division 1 of these specifications, and the following:

1. Submit copes for distribution with product data grouped to include complete submittals of related system, products, and accessories in a single submittal. Each submittal shall be clearly marked to indicate equipment number, specification section, etc., which the submittal describes.
2. Mark dimensions and values in units to match those specified.
3. Data must include job name, dimensions, capacities, construction characteristics, and installation instruction. Where applicable, submittal data must also include metal gauges, frame types, finish fan diameters, bearing types, lubrication system, motor types, insulation, velocities, pressure drops, pump curves, coil areas, filter types and areas, electrical characteristics, wiring and piping diagrams, and accessories required.
4. Submittals must be thoroughly checked by the Contractor and must contain his stamp of approval before being sent to the Design Professional for review.
5. Submittals not conforming to the above requirements will be returned without review.

C. The Design Professional will **review** shop drawings for general conformance to the construction documents. This **review** is provided as a convenience to the Contractor by the Design Professional. The Design Professional will **review** submitted information with reasonable care, however, no responsibility accrues to the Design Professional for errors of omission in the **review** of submitted materials. The Contractor retains complete, sole responsibility for providing materials and equipment that are in conformance to the construction documents.

PART 2 MATERIALS

2.01 ACCESS PANELS

A. Provide access panels for all equipment which must be located in “in-accessible” locations (above fixed ceilings, behind walls, etc.). Access panels shall conform to the requirements of the General Trades Specifications. Turn panels over to the General Trades Contractor for installation. Provide fire rated access panel where such penetrations are through fire rated assemblies.

2.02 MOTORS AND STARTERS

A. Motors for the Mechanical equipment shall be furnished by this Contractor unless

specifically noted to the contrary elsewhere.

B. The work shall be complete in every respect. Where starters, disconnects, etc., are not specifically indicated on the Electrical Trades Drawings and Specifications, they are to be provided by this Contractor.

C. All electrical equipment and installation provided by this Contractor shall conform to the requirements of Electrical Divisions of the specification.

D. Each motor shall have a conduit terminal box.

E. All motors shall have a power factor of 85%, or higher.

2.03 SUBSTITUTIONS

A. In the Drawings and Specifications materials and equipment are generally noted as "based on". The layout and arrangement of systems and equipment for this project are based on the size and arrangement of these manufacturers.

B. For major items of equipment, other manufacturers may be listed who manufacture equipment deemed to be "equal" by the Engineer. These items may be used at the Contractor's option. It remains the Contractor's responsibility to determine which item manufactured by the "alternate" company is equivalent to the item listed as "based on", and to obtain the approval of the Engineer for all such "substitutions".

C. In all cases where items other than those upon which the design is based are used, it is the Contractor's responsibility to determine the impact of providing "alternate" equipment. Where "alternate" equipment is provided, the Contractor shall pay all charges, including design fees and charges by other Contractor's, which may be necessary to accommodate the installation of the "alternate" equipment or materials.

PART 3 EXECUTION

3.01 CUTTING AND PATCHING

A. Perform in accordance with the requirements of Division 1.

B. Perform, or cause to be performed, all cutting and patching necessary for the installation of the work, unless specifically noted to the contrary elsewhere.

C. No structural members shall be cut without written authorization from the Design Professional. All such cutting, when authorized, shall be done in strict accordance with the instructions of the Design Professional.

D. In general, roof and wall openings required for mechanical equipment and systems shall be provided by this Contractor. The size and location of these openings shall be the responsibility of this Contractor.

3.02 ELECTRICAL REQUIREMENTS

A. The electrical characteristics available for each item of mechanical equipment shall be

confirmed with the project electrical contractor before the Mechanical Contractor orders the equipment.

3.03 FINAL ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.04 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean interior and exterior surfaces exposed to view. Vacuum carpeted and soft surfaces where materials have been deposited due to the work of this Contactor.

C. Clean debris from site.

D. Remove waste and surplus materials, rubbish, and construction facilities from the site.

3.05 PROGRESS CLEANING

A. Maintain work areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition at all times.

B. All openings in piping and ductwork systems shall be protected during construction to prevent the entrance of foreign materials.

C. Before installing air inlets and outlets, remove all dirt, debris, and rubbish from inside, on and about air chambers, ducts, fans, register faces, etc. After installation, leave them ready for operation with exposed surfaces clean and ready for finishing.

D. Fixtures and equipment: All fixtures and equipment shall be cleaned. Clean floor drains.

E. All plates, polished, and bronzed surfaces shall be cleaned and polished.

3.06 REMOVAL OF TEMPORARY UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary equipment, facilities, and materials prior to Substantial Completion.

B. Clean and repair damage caused by installation or use of temporary work.

3.07 RIGGING AND HOISTING

A. Provide all rigging and hoisting necessary for the installation of the materials and equipment provided under this Division of work.

3.08 STARTING OF SYSTEMS

A. All systems fabricated on site shall be tested by the Contractor. Testing shall include the provision of all necessary equipment, labor, and fluids.

B. Notify the Design Professional and other inspection authorities at least 48 hours before

the scheduled test, or sampling time.

C. Control devices, instrumentation, and similar items not designed to withstand the test pressures shall be removed, or otherwise protected prior to testing the systems.

D. Temperature Balance: Following completion of controls balancing, room temperatures are to be checked for adequacy and uniformity. Final adjustments will then be made to the systems to compensate for varied load conditions based on temperature balance.

E. Fixtures and equipment: All fixtures and equipment shall be cleaned. Clean floor drains.

F. All plates, polished, and bronzed surfaces shall be cleaned and polished.

G. Valves, faucets, automatic valves, etc., shall be properly adjusted and shall be quiet operating.

3.09 TRANSPORTATION AND HANDLING

A. Transport and handle all materials and equipment in accordance with the manufacturer's directions.

END OF SECTION

SECTION 23 05 53
IDENTIFICATION FOR HVAC SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Nameplates.
2. Tags.
3. Stencils.
4. Ceiling tacks.
5. Labels.

1.02 SUBMITTALS

A. Submit in accordance with the requirements of Division 1, Section 23 00 50, and this section.

B. Product Data: Submit manufacturers catalog literature for each product required.

C. Shop Drawings: Submit list of wording, symbols, letter size, and color coding for mechanical identification and valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.

D. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.

E. Project Record Documents: Record actual locations of tagged valves and equipment; include valve tag numbers.

1.03 QUALITY ASSURANCE

A. Conform to ASME A13.1 for color scheme for identification of piping systems and accessories.

1.04 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 PRODUCTS

2.01 NAMEPLATES

A. Product Description: Laminated three-layer plastic with engraved black letters on light contrasting background color.

2.02 TAGS

A. Plastic Tags:
1. Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inches diameter.

B. Information Tags:
1. Clear plastic with printed "Danger," "Caution," or "Warning" and message; size 3-1/4 x 5-5/8 inches with grommet and self-locking nylon ties.

C. Tag Chart: Typewritten letter size list of applied tags and location in anodized aluminum frame.

2.03 STENCILS

A. Stencils: With clean cut symbols and letters of following size:
1. Ductwork and Equipment: 1-3/4 inches high letters.

B. Stencil Paint: As specified in Section 09 90 00, semi-gloss enamel, colors, lettering, and size conforming to ASME A13.1.

2.04 CEILING TACKS

A. Description: Steel with 3/4 inch diameter color-coded head.

B. Color code as follows:
1. HVAC equipment: Yellow.
2. Fire dampers/smoke dampers: Red.
3. Heating/cooling valves: Blue.

2.05 LABELS

A. Description: Laminated Mylar, size 1.9 x 0.75 inches, adhesive backed with printed identification.

PART 3 EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

B. Prepare surfaces in accordance with paint manufacturer’s requirements for stencil painting.

3.02 INSTALLATION

A. Install identifying devices after completion of coverings and painting.

B. Install plastic nameplates with corrosive-resistant mechanical fasteners.

C. Install labels with sufficient adhesive for permanent adhesion and seal with clear lacquer. For unfinished canvas covering, apply paint primer before applying labels.

D. Install tags using corrosion resistant chain. Number tags as approved by the Owner, coordinate with any existing numbering system.

E. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.

F. Identify air handling units, pumps, heat transfer equipment, etc., with plastic nameplates, or stencil painting. Identify in-line pumps and other small devices with tags. Submit proposed identification scheme for approval before proceeding with any installation.

G. Identify control panels and major control components outside panels with plastic nameplates.

H. Identify valves in main and branch piping with tags.

I. Tag automatic controls, instruments, and relays. Key to control schematic.

J. Identify piping, concealed or exposed, with plastic pipe markers. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 10 feet on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.

K. For exposed natural gas lines other than steel pipe, attach yellow pipe labels with "GAS" in black lettering, at maximum 5 foot spacing.

L. Identify ductwork with stenciled painting. Identify with air handling unit identification number and area served. Locate identification at air handling unit, at each side of penetration of structure or enclosure, and at each obstruction.

M. Provide ceiling tacks to locate valves or dampers above T-bar type panel ceilings. Locate in corner of panel closest to equipment.

END OF SECTION

SECTION 23 31 00
HVAC DUCTS AND CASINGS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Duct Materials.
2. Ductwork fabrication.

1.02 PERFORMANCE REQUIREMENTS

A. Variations of duct configuration, or sizes, are not permitted except by written permission.

1.03 SUBMITTALS

A. Submit in accordance with the requirements of Division 1, Section 23 00 50, and this section. Lead the coordination of the preparation of the coordination drawings indicated below.

B. Product Data: Submit data for duct materials.

C. Test Reports: Indicate pressure tests performed. Include: date, section tested, test pressure, and leakage rate, following SMACNA HVAC Air Duct Leakage Test Manual.

D. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with SMACNA - HVAC Duct Construction Standards - Metal and flexible.

B. Construct ductwork to NFPA 90A and NFPA 96 standards.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Install duct sealant only when temperatures are limits recommended by sealant manufacturers.

B. Maintain recommended temperatures for recommended time periods.

1.06 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 PRODUCTS

2.01 DUCT MATERIALS

A. Galvanized Steel Ducts: ASTM A653/A653M galvanized steel sheet, lock-forming quality, having G60 (zinc coating of in conformance with ASTM A90/A90M).

B. Aluminum Ducts: ASTM B209; aluminum sheet, alloy 3003-H14. Aluminum Connectors and Bar Stock: Alloy 6061-T6 or of equivalent strength.

C. Fasteners: Rivets, bolts, or sheet metal screws.

D. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

2.02 DUCTWORK FABRICATION

A. Fabricate and support rectangular ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and as indicated on the Drawings. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

B. Fabricate and support round ducts with longitudinal seams in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible (Round Duct Construction Standards), and. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

C. Construct T's, bends, and elbows with minimum radius 1-1/2 times centerline duct width. Where not possible and where rectangular elbows are used, provide airfoil shaped turning vanes. Where acoustical lining is indicated, furnish turning vanes of perforated metal with glass fiber insulation.

D. Increase duct sizes gradually, not exceeding 10 degrees divergence and 20 degrees convergence, both measured from the center line of the duct.

E. Seal joints between duct sections and duct seams with welds, gaskets, mastic adhesives, mastic plus embedded fabric systems, or tape.
   1. Sealants, Mastics and Tapes: Conform to UL 181A. Provide products bearing appropriate UL 181A markings.
   2. All sealing products shall bear UL approval markings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify sizes of equipment connections before fabricating transitions.

3.02 INSTALLATION

A. Install and seal ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.

B. During construction, install temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

C. Use crimp joints with or without bead or beaded sleeve couplings for joining round duct sizes 8 inch and smaller.

D. Use double nuts and lock washers on threaded rod supports.

E. Connect flexible ducts to metal ducts with plastic draw bands and adhesive.

F. For outdoor ductwork, protect ductwork, ductwork supports, linings and coverings from weather. Refer to plans for additional details.

G. Exhaust Outlet Locations:
1. Minimum Distance from Property Lines: 3 feet.
2. Minimum Distance from Building Openings: 3 feet.
3. Minimum Distance from Outside Air Intakes: 10 feet.

3.03 INTERFACE WITH OTHER PRODUCTS

A. Install openings in ductwork where required to accommodate thermometers and controllers. Install Pitot tube openings for testing of systems. Where openings are provided in insulated ductwork, install insulation material inside metal ring.

B. Connect diffusers to low pressure ducts with 5 feet maximum length of flexible duct.

3.04 CLEANING

A. Clean duct system to remove accumulated construction dust. Protect equipment with potential to be harmed by excessive dirt with temporary filters, or bypass during cleaning.

3.05 TESTING

A. Test in accordance with SMACNA HVAC Air Duct Leakage Test Manual.

B. Maximum Allowable Leakage: In accordance with ICC IECC.

3.06 SCHEDULES

A. Ductwork Material Schedule:

AIR SYSTEM	MATERIAL
Supply	Galvanized Steel
Return and Relief	Galvanized Steel
General Exhaust	Galvanized Steel
Shower Exhaust	Aluminum
Outside Air Intake	Galvanized Steel
Combustion Air	Steel

B. Ductwork Pressure Class Schedule:

AIR SYSTEM	PRESSURE CLASS
Constant Volume Supply	1 inch wg
Return and Relief	1 inch wg
General Exhaust	1 inch wg

END OF SECTION

SECTION 23 37 00
AIR OUTLETS AND INLETS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Ceiling Grid Core Exhaust and Return Grilles.

1.02 SUBMITTALS

A. Submit in accordance with the requirements of Division 1, Section 23 00 50, and this section.

B. Product Data: Submit sizes, finish, and type of mounting. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.

C. Test Reports: Rating of air outlet and inlet performance.

D. Project Record Documents: Record actual locations of air outlets and inlets.

1.03 QUALITY ASSURANCE

A. Test and rate diffuser, register, and grille performance in accordance with ASHRAE 70.

B. Test and rate louver performance in accordance with AMCA 500.

PART 2 PRODUCTS

2.01 CEILING GRID CORE EXHAUST AND RETURN GRILLES

A. Type: Fixed grilles of 1/2 x 1/2 x 1 inch louvers.

B. Fabrication: Aluminum with factory clear lacquer finish.

C. Frame: 1-1/4 inch margin with concealed mounting, or Channel lay-in frame for suspended grid ceilings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inlets and outlets shall be installed as shown on the Architectural Reflected Ceiling Plans.

B. Verify ceiling and wall systems are ready for installation.

C. Before ordering any materials, confirm that items shown and specified are appropriate for the ceiling and wall construction into which they will be installed.

3.02 INSTALLATION

A. Install diffusers to ductwork with airtight connection.

B. Install balancing dampers on duct take-off to each air inlet or outlet.

C. Paint visible portion of ductwork behind air outlets and inlets matte black.

D. Do not locate air inlets or outlets in floors of toilet or bathing rooms.

3.03 INTERFACE WITH OTHER PRODUCTS

A. Check location of air inlets and outlets, and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

END OF SECTION

DIVISION 26 00 00
ELECTRICAL
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END OF SECTION

SECTION 26 00 50
BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. This section is a part of the entire set of Contract Documents and shall be coordinated with the applicable provisions of the other parts.

B. The following requirements are intended as clarification of, or additions to the requirements set forth under General Conditions, Supplementary Conditions and Division 1 of these Specifications. Should there be any conflict between these requirements and those in the General Conditions, Supplementary Conditions and Division 1, the Contractor shall make written request for clarification of same by Addendum prior to bid opening or abide by the decision of the Engineer without resource.

1.02 SCOPE OF WORK

A. Description of Work
1. The work to be executed under this Section includes the furnishing of all labor; equipment and incidental services required to complete and leave ready for operation, the equipment and systems as indicated on the drawings and hereinafter specified. All material, supervision, etc. required for a complete system, will be furnished by this Contractor.
2. Materials and installation methods shall adhere to the provisions of the Americans with Disabilities Act (ADA).

B. Work Specified Elsewhere
1. The Contractor shall review the drawings and specifications of all trades concerning this project to correlate equipment installation and connections.

1.03 DRAWINGS

A. The drawings indicate the location and general arrangement of all electrical work and shall be followed as closely as actual building construction and work of other trades will permit. The Electrical Trades shall examine the drawings of other trades and shall verify the conditions governing his work at the job site. He shall arrange his work accordingly. No changes shall be made without the prior written approval of the Engineer.

B. Field Measurements
1. Verify the dimensions (scaled) governing this work at the building site. No extra compensation will be claimed or allowed on account of differences between actual dimensions and those indicated on the drawings. Examine adjoining work, on which this work is dependent for perfect efficiency and report any work, which must be corrected. No waiver of responsibility for defective work shall be claimed or allowed due to the failure to report unfavorable conditions affecting this work.
2. Generally the Engineering drawings take precedence in all matters pertaining to the building structure; electrical drawings in all matters pertaining to electrical trades take precedence in electrical installation. However, all conflicts shall be reported to the Engineer for his review.

C. Coordination
1. Before any work is installed, and before any equipment is fabricated or purchased, the Electrical Trades shall carefully check the general drawings, and all other mechanical and electrical drawings, and all job conditions and any lack of coordination between the work and drawings or job conditions shall be immediately reported to the Engineer in writing.

D. Inspection of Site
1. The Electrical Trades shall visit the site, examine and verify the conditions under which his work must be conducted before submitting a bid.

1.04 CODES AND STANDARDS

A. The following documents are a part of this specification and shall indicate minimum safety provisions. All work called for in these specifications and on the plans that exceed minimum safety provisions shall take precedence.
1. Michigan Building Code – latest edition.
2. State Electrical Code.
3. National Fire Protection Association.
4. NESC (National Electric Safety Code).
5. ADA (Americans with Disabilities Act).
6. AEIC (Association of Edison Illuminating Companies).
7. ANSI (American National Standards Institute).
8. ASTM (American Society for Testing and Materials).
9. ICEA (Insulated Cable Engineers Association).
10. IEEE (Institute of Electrical and Electronics Engineers).
11. IES (Illuminating Engineers Society).
12. NEMA (National Electrical Manufacturers Association).
13. NETA (National Electrical Testing Association Inc.).
14. OSHA (Occupational Safety and Health Act).
15. UL (Underwriter's Laboratories).

B. Where reference is made to the National Electric Code, the 2005 version is to be used.

1.05 MANUFACTURER'S DIRECTIONS

A. Install all equipment in strict accordance with all directions and recommendations furnished by the manufacturer. Where such directions are in conflict with the plans and specifications, report such conflicts to the Engineer who shall make such compromises, as he deems necessary and desirable.

1.06 EXISTING ELECTRICAL, COMMUNICATION, EQUIPMENT AND DISTRIBUTION SYSTEMS

A. Carefully examine the drawings and specifications, visit the project site, and be fully informed as to all existing conditions, dimensions and limitations before starting the work.

B. Notify all authorities having jurisdiction over conduits, wires, pipes or other equipment, which are not needed or which interfere in any manner with the execution of this work, to remove or protect such systems or equipment as required.

C. If existing active or non-active systems (which are not indicated on plans) are encountered that require relocation or disconnecting, make written request for decision on proper handling of these systems, and do not proceed with the work until so authorized by the Engineer. Contractor shall visit the site and verify site conditions on existing services.

1.07 CUTTING AND PATCHING

A. No cutting shall be done which is likely to impair the strength of the building.

B. All openings in walls, ceilings, or floors required by the Contractor shall be in accordance with Division 1.

C. All measures necessary for the proper installation of materials or apparatus shall be taken in the field, and cutting and patching shall be provided where necessary.

D. Where such cutting becomes necessary, employ the trade, which installed the work originally to do the cutting and to restore such cutwork and close openings. Before any cutting or drilling of holes is attempted, notify the Engineer for approval.

1.08 SUBMITTALS

A. Submittals for review, except color samples, shall be made to the engineer in pdf electronic format. The engineer will add his review stamp to the electronic format and return it to the contractor for his records.

B. Submittals for review shall be made prior to the purchase of materials. Submittal procedures shall be in accordance with Division 1 of these specifications, and the following:
   1. Submit copes for distribution with product data grouped to include complete submittals of related system, products, and accessories in a single submittal. Each submittal shall be clearly marked to indicate equipment number, specification section, etc., which the submittal describes.
   2. Mark dimensions and values in units to match those specified.

3. Data must include job name, dimensions, capacities, construction characteristics, and installation instruction. Where applicable, submittal data must also include metal gauges, frame types, finish fan diameters, bearing types, lubrication system, motor types, insulation, velocities, pressure drops, pump curves, coil areas, filter types and areas, electrical characteristics, wiring and piping diagrams, and accessories required.
4. Submittals must be thoroughly checked by the Contractor and must contain his stamp of approval before being sent to the Design Professional for review.
5. Submittals not conforming to the above requirements will be returned without review.

C. The Design Professional will **review** shop drawings for general conformance to the construction documents. This **review** is provided as a convenience to the Contractor by the Design Professional. The Design Professional will **review** submitted information with reasonable care, however, no responsibility accrues to the Design Professional for errors of omission in the **review** of submitted materials. The Contractor retains complete, sole responsibility for providing materials and equipment that are in conformance to the construction documents.

1.09 OPERATIONS AND MAINTENANCE DATA

A. Refer to General Requirements – Project Closeout, for procedures and requirements for preparation and submittal of material manuals.

B. In addition to the information required by Division 1 for maintenance data, include the following information:
1. Provide indicated number of sets of operating/maintenance manuals.
2. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.
3. Manufacturer's printed operation procedures to include start-up, break-in, routine and normal operating instructions; regulations, control, stopping, shut-down, and emergency instructions.
4. Maintenance procedures for routine preventative maintenance and trouble-shooting; disassembly, repair, and reassembly; aligning and adjusting instructions.
5. Servicing instructions and lubrication charts and schedules.

1.10 TEMPORARY POWER

A. Provide temporary power and lighting as required for all trades for this project. Include temporary power service from the utility. Pay all costs associated with temporary power as a part of the base bid for the project.

PART 2 MATERIALS

2.01 BASIC MATERIALS AND METHODS:

A. In all instances where drawings or specifications indicate materials or methods of higher quality than the required minimum by the referenced codes, the drawings and specification shall govern. All electrical equipment shall be UL listed (or equal testing agency) where applicable.

PART 3 EXECUTION

3.01 COORDINATION

A. Many areas of this building will have limited ceiling space available for the installation of all trades work. The Electrical Contractor shall carefully coordinate the installation of his work with all other trades before any fabrication or installation of materials takes place.

B. Provide to the Mechanical Contractor a list of the power characteristics that will be available at each item of his equipment (a note that says “as specified” is not acceptable). No electrical work associated with connection to equipment provided by others until the required information has been properly coordinated between the Contractors.

C. Review the lighting plans against the Architectural reflected ceiling plans and report any discrepancies to the Design Professional before materials are ordered.

D. Review the power plans against the final furniture plans before rough-in, and report any discrepancies to the Design Professional.

3.02 CONDITIONS OF COMPLETION

A. As conditions for the final inspection by the engineer and final payment, the Electrical Contractor shall turn over the following items to the Owner:
   1. All panel and cabinet keys, spare parts, operating instructions, maintenance instructions, schematics, wiring diagrams, etc.
   2. A certificate of final inspection indicating approval by the inspecting authority.
   3. Operating and maintenance manuals.
   4. Final as-built record drawings provided per requirements as follows:
      a. Electronic file on CD, AutoCAD 2005, or later.

3.03 PAINTING

A. The Electrical Contractor shall cooperate with the Architectural Trade responsible for painting and identifying all exposed electrical equipment in finished areas. Care shall be taken to insure that all nameplates of electrical equipment shall not be painted.

B. The Contractor shall paint or touch-up any electrical equipment damaged or scratched in handling or installation or shipping from the factory

3.04 GUARANTEE

A. Provide general guarantee for one (1) year on all labor and material in approved form. Provide and special guarantees as required under the sections of the specification. Refer to guarantee requirements in General Conditions.

3.05 PERMITS

A. The Contractor shall secure and pay for all permits and inspections required for the electrical work. All permits and certificates of inspection, approval signed by the controlling building department, shall be furnished in duplicate to the Engineer and shall become the property of the Owner. The Contractor shall pay any fees and inspection costs.

3.06 ELECTRICAL REQUIREMENTS

A. The electrical characteristics available for each item of Mechanical equipment shall be confirmed with the project Mechanical Contractor before the equipment is ordered.

3.07 FINAL ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.08 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean interior and exterior surfaces exposed to view. Vacuum carpeted and soft surfaces where materials have been deposited due to work of this Contractor.

C. Clean debris from site.

D. Remove waste and surplus materials, rubbish, and construction facilities from the site.

3.09 PROGRESS CLEANING

A. Maintain work areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition at all times.

B. All openings in conduit systems shall be protected during construction to prevent the entrance of foreign materials.

3.10 REMOVAL OF TEMPORARY UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary equipment, facilities, and materials prior to Substantial Completion.

B. Clean and repair damage caused by installation or use of temporary work.

3.11 RIGGING, HOISTING, AND HANDLING

A. Provide all rigging and hoisting necessary for the installation of the materials and equipment provided under this Division of work. Handle all materials in accordance with manufacturer's instructions.

3.12 DAMAGE TO OTHER WORK

A. This Contractor will be held responsible for damage to work caused by his work or through the negligence of his workman. The trade, which originally installed the work, as directed by the Engineer will do all patching and repairing of damaged work, but the cost of same shall be paid by this Contractor.

3.13 INSPECTION AND TESTS

A. Authorized representatives of the Engineer shall have access to and the privilege of inspecting all work and materials as the work progresses. These representatives will have authority to approve or reject any work with the drawings, installation instructions, specifications, codes, and good engineering practice as a basis for any actions taken.

B. Circuits shall be phased out and connected to the panels in proper manner before equipment is energized. Loads shall be distributed as evenly as possible on all phases. All wires shall be entirely free from grounds and short circuits.

C. Refer to additional testing/adjusting to meet requirements specified within Division 16.

END OF SECTION

SECTION 26 05 19
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
1. Building wire and cable.
2. Wiring connectors and connections.

1.02 DESIGN REQUIREMENTS

A. Conductor sizes shown on the plans, or in the specifications, are based on copper.

B. The base bid for this project shall be based on copper conductors throughout. The Contractor, at his option, may submit a voluntary alternate with his bid noting the change in price offered using aluminum conductors in lieu of copper.

1.03 SUBMITTALS

A. Submit in accordance with the requirements of Division 1, Section 26 00 50, and this section.

B. Product Data: Submit for building wire and each cable assembly type.

C. Design Data: Indicate voltage drop and ampacity calculations for aluminum conductors substituted for copper conductors.

D. Test Reports: Indicate procedures and values obtained.

E. Project Record Documents: Record actual locations of components and circuits.

1.04 QUALITY ASSURANCE

A. Wiring materials located in air handling plenums shall conform to the following:
1. Peak optical density not greater than 0.5.
2. Average optical density not greater than 0.15.
3. Flame spread not greater than 5 feet when tested in accordance with NFPA 262.

1.05 FIELD MEASUREMENTS

A. Verify field measurements are as indicated on Drawings.

1.06 COORDINATION

A. Where wire and cable destination is indicated and routing is not shown, determine routing and lengths required.

B. Wire and cable routing indicated is approximate unless dimensioned.

PART 2 PRODUCTS

A. BUILDING WIRE
   1. Provide products as follows:
      a. Stranded conductor for feeders and branch circuits 10 AWG and smaller.
      b. Stranded conductors for control circuits.
      c. Conductor not smaller than 12 AWG for power and lighting circuits.
      d. Conductor not smaller than 14 AWG for control circuits.
      e. Increase wire size in branch circuits to limit voltage drop to a maximum of 3 percent.

B. Product Description: Single conductor insulated wire.

C. Conductor: Copper.

D. Insulation Voltage Rating: 600 volts.

E. Insulation Temperature Rating: 60 degrees C.

F. Insulation Material: Thermoplastic.

2.02 WIRING CONNECTORS

A. Split Bolt Connectors:

B. Solder-less Pressure Connectors:

C. Spring Wire Connectors:

D. Compression Connectors:

2.03 TERMINATIONS

A. Terminal Lugs for Wires 6 AWG and Smaller: Solder-less, compression type copper.

B. Lugs for Wires 4 AWG and Larger: Color keyed, compression type copper, with insulating sealing collars.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify interior of building has been protected from weather.

B. Verify mechanical work likely to damage wire and cable has been completed.

C. Verify raceway installation is complete and supported.

3.02 PREPARATION

A. Completely and thoroughly swab raceway before installing wire.

3.03 EXISTING WORK

A. Remove exposed abandoned wire and cable, including abandoned wire and cable above ceilings where new work is to take place. Patch surfaces where removed cables pass through building finishes.

B. Disconnect abandoned circuits and remove circuit wire and cable. Remove abandoned boxes when wire and cable servicing boxes is abandoned and removed. Install blank cover for abandoned boxes not removed.

C. Provide access to existing wiring connections remaining active and requiring access. Modify installation or install access panel.

D. Extend existing circuits using materials and methods compatible with existing electrical installations, and as specified.

E. Clean and repair existing wire and cable remaining or wire and cable to be reinstalled.

3.04 SYSTEM DESCRIPTION

A. Wiring Methods: Provide the following wiring methods:
   1. Concealed Interior Locations: Building wire, Type THHN/THWN insulation, in raceway.

3.05 INSTALLATION

A. Route wire and cable to meet Project conditions.

B. Neatly train and lace wiring inside boxes, equipment, and panelboards.

C. Identify and color code wire and cable under provisions of Section 26 05 53. Identify each conductor with its circuit number or other designation indicated.

D. Special Techniques - Building Wire in Raceway:
   1. Pull conductors into raceway at same time.
   2. Install building wire 4 AWG and larger with pulling equipment.

E. Special Techniques - Wiring Connections:
   1. Clean conductor surfaces before installing lugs and connectors.
   2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
   3. Tape un-insulated conductors and connectors with electrical tape to 150 percent of insulation rating of conductor.
   4. Install split bolt connectors for copper conductor splices and taps, 6 AWG and larger.
   5. Install solder-less pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.

6. Install insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
7. Install suitable reducing connectors or mechanical connector adaptors for connecting aluminum conductors to copper conductors.

F. Install stranded conductors for branch circuits 10 AWG and smaller. Install crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under screws.

G. Install terminal lugs on ends of 600 volt wires unless lugs are furnished on connected device, such as circuit breakers.

H. Size lugs in accordance with manufacturer's recommendations terminating wire sizes. Install 2-hole type lugs to connect wires 4 AWG and larger to copper bus bars.

I. For terminal lugs fastened together such as on motors, transformers, and other apparatus, or when space between studs is small enough that lugs can turn and touch each other, insulate for dielectric strength of 2-1/2 times normal potential of circuit.

3.06 WIRE COLOR

A. General: Match color standard already in use, or:
1. For all wire sizes, install wire colors in accordance with the following:
a. Black and red for single phase circuits at 120/240 volts.
b. Black, red, and blue for circuits at 120/208 volts single or three phase.
c. Orange, brown, and yellow for circuits at 277/480 volts single or three phase.

B. Neutral Conductors: White. When two or more neutrals are located in one conduit, individually identify each with proper circuit number.

C. Branch Circuit Conductors: Install three or four wire home runs with each phase uniquely color coded.

D. Feeder Circuit Conductors: Uniquely color code each phase.

E. Ground Conductors:
1. For 6 AWG and smaller: Green.
2. For 4 AWG and larger: Identify with green tape at both ends and visible points including junction boxes.

3.07 FIELD QUALITY CONTROL

A. Inspect and test in accordance with NETA ATS, except Section 4.

B. Perform inspections and tests listed in NETA ATS, Section 7.3.1.

END OF SECTION

SECTION 26 05 33
RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
1. Conduit and tubing.
2. Surface raceways.
3. Wireway.
4. Outlet boxes.
5. Pull and junction boxes.
6. Handholes.

1.02 SYSTEM DESCRIPTION

A. Raceway and boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.

B. Minimum Raceway Size: 1/2 inch unless otherwise specified.

1.03 SUBMITTALS

A. Submit in accordance with the requirements of Division 1, Section 26 00 50, and this section.

B. Product Data: Submit for the following:
1. Conduit.
2. Raceway fittings.

C. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

D. Project Record Documents:
1. Record actual routing of conduits 2 inches and larger.
2. Record actual locations and mounting heights of outlet, pull, and junction boxes.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle in accordance with the requirements of Division 1, Section 26 00 50, and this Section.

B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

C. Protect PVC conduit from sunlight.

1.05 COORDINATION

A. Coordinate mounting heights, orientation and locations of outlets with all features of other systems including, but not limited to: Cabinets, counter heights, backsplash heights, finned tube, mirrors, etc.

PART 2 PRODUCTS

2.01 ELECTRICAL METALLIC TUBING (EMT)

A. Product Description: ANSI C80.3; galvanized tubing.

B. Fittings and Conduit Bodies: NEMA FB 1; steel, compression type.

2.02 CONDUIT APPLICATION

A. Interior Concealed Dry Locations: Provide electrical metallic tubing. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.

B. Exposed Dry Locations: Provide electrical metallic tubing. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.

2.03 PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

B. Surface Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface mounted junction box:
1. Material: Galvanized cast iron.
2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.

PART 3 EXECUTION

3.01 CORRDINATION

A. Participate in coordination meetings with all other trades to establish routing that does not interfere with the work of other trades. Said coordination shall precede any installation of materials.

B. It is intended that all raceway and boxes be concealed in the project work area, unless specifically noted to the contrary on the Plans. Surface mounted metal raceway is only acceptable for existing walls that are to remain in place, and then, only as specifically noted on the Plans.

3.02 EXAMINATION

A. Verify outlet locations and routing and termination locations of raceway prior to rough-in. Verification shall include, but not be limited to: Review final furniture layouts, initiate a meeting to include the Owner and Architect / Engineer to review proposed receptacle locations.

3.03 EXISTING WORK

A. Remove exposed abandoned raceway, including abandoned raceway above ceilings in the project work area. Cut raceway flush with walls and floors, and patch surfaces.

B. Remove concealed abandoned raceway to its source, including conditions where the subject raceway extends beyond the new work area.

C. Disconnect abandoned outlets and remove devices. Remove abandoned outlets when raceway is abandoned and removed. Install blank cover for abandoned outlets not removed (where the existing wall is to remain in place).

D. Maintain access to existing boxes and other installations remaining active and requiring access. Modify installation or provide access panel.

E. Extend existing raceway and box installations using materials and methods compatible with existing electrical installations, and as specified.

F. Clean and repair existing raceway and boxes to remain or to be reinstalled.

3.04 INSTALLATION – GENERAL

A. Ground and bond raceway and boxes as required by code, and as required by the contract documents.

B. Fasten raceway and box supports to structure and finishes in accordance with code, and as required by the contract documents.

C. Identify raceway and boxes in accordance with Section 26 05 53.

D. Arrange raceway and boxes to maintain maximum headroom and present neat appearance.

3.05 INSTALLATION - RACEWAY

A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system. Coordinate location of all raceway before installation begins.

B. Arrange raceway supports to prevent misalignment during wiring installation.

C. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

D. Group related raceway; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional raceways.

E. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports

F. Do not attach raceway to ceiling support wires or other piping systems.

G. Construct wireway supports from steel channel.

H. Route exposed raceway parallel and perpendicular to walls.

I. Route raceway installed above accessible ceilings parallel and perpendicular to walls.

J. Route conduit under slab from point-to-point.

K. Do not install raceway within concrete floor slab.

L. Maintain clearance between raceway and piping for maintenance purposes.

M. Maintain 12 inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.

N. Bring conduit to shoulder of fittings; fasten securely.

O. Install conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.

P. Install no more than equivalent of three 90 degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams. Install factory elbows for bends in metal conduit larger than 2 inch size.

Q. Avoid moisture traps; install junction box with drain fitting at low points in conduit system.

R. Install fittings to accommodate expansion and deflection where raceway crosses control and expansion joints.

S. Install suitable pull string or cord in each empty raceway except sleeves and nipples.

T. Install suitable caps to protect installed conduit against entrance of dirt and moisture.

U. Surface Raceway: Install flat-head screws, clips, and straps to fasten raceway channel to surfaces; mount plumb and level. Install insulating bushings and inserts at connections to outlets and corner fittings.

V. Close ends and unused openings in wireway.

3.06 INSTALLATION - BOXES

A. All boxes shall be installed plumb, and flush with the surface in which they are installed.

B. Install wall mounted boxes at elevations to accommodate mounting heights required by Code and as indicated on Drawings.

C. Orient boxes to accommodate wiring devices oriented as specified elsewhere.

D. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

E. In Accessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.

F. Coordinate masonry cutting to achieve neat opening.

G. Install boxes serving rooms on opposite sides of a common wall with a minimum of 6 inches separation. Where the wall construction includes sound attenuation, increase the minimum separation to 24 inches. Do not install boxes back to back.

H. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.

I. Install stamped steel bridges to fasten flush mounting outlet box between studs.

J. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

K. Install adjustable steel channel fasteners for hung ceiling outlet box.

L. Do not fasten boxes to ceiling support wires or other piping systems.

M. Support boxes independently of conduit.

N. Install gang box where more than one device is mounted together. Do not use sectional box.

O. Install gang box with plaster ring for single device outlets.

3.07 INTERFACE WITH OTHER PRODUCTS

A. Install conduit to preserve all fire resistance ratings indicated on the plans.

B. Where conduits penetrate the roof, provide Pate Pipe Curb (or similar). Pitch pockets are not acceptable.

C. Locate outlet boxes to allow luminaires positioned as indicated on Drawings (including the reflected ceiling plan).

D. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

3.08 ADJUSTING

A. Adjust flush-mounting outlets to make front plumb, and flush with finished wall material.

B. Install knockout closures in unused openings in boxes.

3.09 CLEANING

A. Clean interior of boxes to remove dust, debris, and other material.

B. Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Nameplates.
2. Labels.
3. Wire markers.
4. Conduit markers.
5. Stencils.

1.02 SUBMITTALS

A. Submit in accordance with the requirements of Division 1, Section 26 00 50, and this section.

B. Product Data:
1. Submit manufacturer’s catalog literature for each product required.
2. Submit electrical identification schedule including list of wording, symbols, letter size, color coding, tag number, location, and function.

C. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.

D. Project Record Documents: Record actual locations of tagged devices; include tag numbers.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle in accordance with the requirements of Division 1, Section 26 00 50, and this Section.

B. Accept identification products on site in original containers. Inspect for damage.

C. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

D. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.04 ENVIRONMENTAL REQUIREMENTS

A. Install identification only when ambient temperature and humidity conditions are within range recommended by manufacturer. Maintain conditions for time periods recommended by manufacturer.

PART 2 PRODUCTS

2.01 NAMEPLATES

A. Product Description: Laminated three-layer plastic with engraved black letters on light contrasting background color.

B. Letter Size:
1. 1/8 inch high letters for identifying individual equipment and loads.
2. 1/4 inch high letters for identifying grouped equipment and loads.

C. Minimum nameplate thickness: 1/8 inch.

2.02 LABELS

A. Labels: Embossed adhesive tape, with 3/16 inch white letters on black background.

2.03 WIRE MARKERS

A. Description: Cloth tape, type wire markers.

B. Legend:
1. Power and Lighting Circuits: Branch circuit or feeder number to indicate connection as actually installed.
2. Control Circuits: Control wire number to indicate connection as actually installed.

2.04 CONDUIT AND RACEWAY MARKERS

A. Description: Nameplate fastened with straps, or stencils.

B. Color:
1. 480 Volt System: Black lettering on white background.
2. 208 Volt System: Black lettering on white background.

C. Legend:
1. 480 Volt System: 480 VOLTS.
2. 208 Volt System: 208 VOLTS.

2.05 STENCILS

A. Stencils: With clean cut symbols and letters of following size:
1. Up to 2 inches Outside Diameter of Raceway: 1/2 inch high letters.
2. 2-1/2 to 6 inches Outside Diameter of Raceway: 1 inch high letters.

B. Stencil Paint: Semi-gloss enamel, colors to match existing color code, or if no existing code is in place, conform:
1. Blue lettering on white background.

PART 3 EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

B. Prepare surfaces in accordance with manufacturer's recommendations for stencil painting.

3.02 EXISTING WORK

A. Where existing components are modified in any way as a part of this project, install identification in accordance with this section.

3.03 INSTALLATION

A. Install identifying devices after completion of General Trades painting.

B. Nameplate Installation:
1. Install nameplate parallel to equipment lines.
2. Install nameplate for each electrical distribution and control equipment enclosure with corrosive-resistant mechanical fasteners, or adhesive.
3. Install nameplates for each control panel and major control components located outside panel with corrosive-resistant mechanical fasteners, or adhesive.
4. Secure nameplate to equipment front using screws.
5. Secure nameplate to inside surface of door on recessed panelboard in finished locations.
6. Install nameplates for the following:
   a. Switchboards.
   b. Panelboards.
   c. Transformers.
   d. Service Disconnects.

C. Label Installation:
1. Install label parallel to equipment lines.
2. Install label for identification of individual control device stations, and.
3. Install labels for permanent adhesion and seal with clear lacquer.

D. Wire Marker Installation:
1. Install wire marker for each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.
2. Mark data cabling (installed as a part of Contractor's work) at each end. Install additional marking at accessible locations along the cable run.
3. Install labels at data outlets (installed as a part of Contractor's work) identifying patch panel and port designation.

E. Conduit and Raceway Marker Installation:
1. Install conduit and raceway marker for each conduit and raceway larger than 2 inches diameter, and longer than 6 feet.
   a. Marker Spacing: 20 feet on center.
   b. Identify using field painting.

1) Paint colored band on each conduit or raceway.
   a) 480 Volt System: Blue.
   b) 208 Volt System: Yellow.

F. Stencil Installation:
   1. Apply stencil painting in accordance manufacturer's recommendations.

END OF SECTION

SECTION 26 51 00
INTERIOR LIGHTING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
1. Interior luminaires.
2. Lamps.
3. Ballasts.
4. Accessories.

1.02 SUBMITTALS

A. Submit in accordance with the requirements of Division 1, Section 26 00 50, and this section.

B. Shop Drawings: Indicate dimensions and components for each luminaire not standard product of manufacturer.

C. Product Data: Submit dimensions, ratings, and performance data.

1.03 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 PRODUCTS

2.01 INTERIOR LUMINAIRES

A. Product Description: Complete interior luminaire assemblies, with features, options, and accessories as scheduled.

2.02 FLUORESCENT BALLASTS

A. Product Description: Electronic ballast instant start less than 10 percent THD certified by Certified Ballast Manufacturers, Inc. to comply with ANSI C82.1, suitable for lamps specified, with voltage to match luminaire voltage.

PART 3 EXECUTION

3.01 EXISTING WORK

A. Disconnect and remove abandoned luminaires, lamps, and accessories.

B. Extend existing interior luminaire installations using materials and methods compatible with existing installations, and as specified.

C. Clean and repair existing interior luminaires to remain or to be reinstalled.

3.02 INSTALLATION

A. Install surface mounted luminaires plumb and adjust to align with building lines and with each other. Secure to prevent movement.

B. Install accessories furnished with each luminaire.

C. Connect luminaires to branch circuit.

D. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.

E. Install specified lamps in each luminaire.

F. Ground and bond interior luminaires in accordance with the NEC and this specification.

3.03 FIELD QUALITY CONTROL

A. Operate each luminaire after installation and connection. Inspect for proper connection and operation.

3.04 ADJUSTING

A. Aim and adjust luminaires as indicated on Drawings.

3.05 CLEANING

A. Remove dirt and debris from enclosures.

B. Clean photometric control surfaces as recommended by manufacturer.

C. Clean finishes and touch up damage.

3.06 PROTECTION OF FINISHED WORK

A. All lamps shall be properly operating at Substantial Completion.

END OF SECTION