

## **BIDDING DOCUMENTS**

**HCMA Project No. 509-16-532**

**AEW Project No. 0215-0038**

**Stony Creek Landing**

**Stony Creek Metropark**

**Macomb County, Michigan**

**Huron-Clinton Metropolitan Authority**





CONTRACT DOCUMENTS

HCMA Project No. 509-16-532  
AEW Project No. 0215-0038

Stony Creek Landing

Stony Creek Metropark

Macomb County, Michigan

Huron-Clinton Metropolitan Authority

COMMISSIONERS

John C. Hertel, Chairman  
Timothy J. McCarthy, Vice Chairman  
Robert W. Marans, Treasurer  
Jaye Quadrozzi, Secretary  
Anthony V. Marrocco  
Bernard Parker  
Steven E. Williams

George Phifer  
Director

April 10, 2017



Stony Creek Landing  
HCMA Project No. 509-16-532  
AEW Project No. 0215-0038  
Stony Creek Metropark

TABLE OF CONTENTS

<u>NUMBER</u>	<u>DOCUMENT/SECTION TITLE</u>
	<b>Introductory Information</b>
00010	Title Sheets – 2 pp Table of Contents Project Directory List of Drawings – 2 pp
	<b>Bidding Documents</b>
00050	Advertisement for Bids – 2 pp
00100	Project Description
00220	Instruction to Bidders
[form]	Geotechnical Data
	Bid Form - 8pp
	<b>Contract Documents</b>
[form]	General Conditions – pp 1-19
[form]	Contract Form, Project No. 509-16-532 – 7 pp
[form]	Performance Bond – 1 p
[form]	Labor and Material Bond – 1 p
[form]	Maintenance Bond – 1 p
	<b>Specifications</b>
	<b>DIVISION 1 – GENERAL REQUIREMENTS</b>
01027	Application for Payment
01030	Alternates
01035	Modification Procedures
01200	Project Meetings
01300	Submittals
01300A	Appendix “A” HCMA’s Submittal Form
01300B	Appendix “B” – Submittals Numbering and Transmittal Instructions
01310	Coordination

01310A	Appendix "A" – Request for Interpretation
01420	References
01450	Quality Control Services
01500	Temporary Construction Facilities
01570	Project Signage
01570A	Appendix "A" – Project Identification Sign
01600	Materials and Equipment
01630	Product Options and Substitutions
01630A	Appendix "A" – Substitution Request Form
01700	Contract Closeout
01740	Warranties
01780	Record Documents

## DIVISION 2 – SITE CONSTRUCTION

02140	Dewatering
02210	Soil Erosion and Sedimentation Control
02221	Building Demolition
02230	Site Clearing
02300	Earthwork
02480	Landscape Work
02499	Landscape Maintenance and Warranty Standards
02530	Sanitary Sewerage
02620	Subdrainage
02630	Storm Drainage
02665	Water Distribution
02740	Hot-Mix Asphalt Paving
02751	Cement Concrete Pavement
02764	Pavement Joint Sealants
02800	Site Furnishings
02925	Cleanup and Restoration

## DIVISION 4 – MASONRY

04100	Mortar & Grout
04300	Unit Masonry
04730	Manufactured Stone Veneer

## DIVISION 6 – WOOD AND PLASTICS

06100	Carpentry
06402	Interior Architectural Woodwork

## DIVISION 7 – THERMAL AND MOISTURE PROTECTION

07160	Bituminous Dampproofing
07175	Water Repellent Coatings
07200	Insulation
07310	Shingle Roofing
07410	Standing Seam Roof Panels
07466	Fiber Cement Siding
07610	Standing Seam Metal Roofing System
07620	Metal Flashing/Trim/Roof Accessories
07711	Commercial Gutter System
07910	Joint Fillers and Gaskets
07920	Sealants and Caulking

## DIVISION 8 – DOORS AND WINDOWS

08112	Hollow Metal Work
08210	Flush Wood Doors
08305	Access Doors & Panels
08330	Rolling Counter Shutter
08410	FRP Doors – Aluminum Framing Systems
08520	Aluminum Windows – Sliding Windows
08710	Door Hardware
08800	Glass and Glazing

## DIVISION 9 – FINISHES

09210	Lawns and Grasses
09220	Top Soil
09250	Gypsum Dry Wall
09300	Tile Work
09510	Acoustical Ceilings
09900	Painting

## DIVISION 10 – SPECIALTIES

10160	Toilet Partitions
10400	Identification Devices

## DIVISION 11 – EQUIPMENT

11400	Food Service Equipment
-------	------------------------

## DIVISION 15 – MECHANICAL

15010	Mechanical General Provisions
15050	Basic Materials and Methods
15990	Testing, Adjusting, and Balancing

#### DIVISION 16 – ELECTRICAL

16000	Electrical General Provisions
16040	Electrical Identification
16050	Electrical Basic Materials and Methods



Stony Creek Landing  
HCMA Project No. 509-16-532  
AEW Project No. 0215-0038  
Stony Creek Metropark

PROJECT DIRECTORY

OWNER

HURON-CLINTON METROPOLITAN  
AUTHORITY  
13000 High Ridge Drive  
Brighton, MI 48114  
Phone: 810-227-2757  
Fax: 810-227-8610

**DESIGN CONSULTANTS**

SITE:

CIVIL ENGINEER

ANDERSON, ECKSTEIN & WESTRICK, INC.  
51301 Schoenherr Road  
Shelby Township, MI 48315  
Phone: 586-726-1234  
Fax: 586-726-8780

ARCHITECT

ANDERSON, ECKSTEIN & WESTRICK, INC.  
51301 Schoenherr Road  
Shelby Township, MI 48315  
Phone: 586-726-1234  
Fax: 586-726-8780



Stony Creek Landing  
HCMA Project No. 509-16-532  
AEW Project No. 0215-0038  
Stony Creek Metropark

LIST OF DRAWINGS

<b><u>Dwg. No.</u></b>	<b><u>Drawing Title</u></b>
------------------------	-----------------------------

---

**CIVIL SHEETS**

C1	Title Sheet
C2	Site Plan
C3	Construction Staging Plan
C4	Demolition Plan
C5	Demolition Plan
C6	Utility Plan
C7	Utility Profiles
C8	Paving & Grading Plans
C9	Paving & Grading Plans
C10	Paving & Grading Plans
C11	Geometrics & Striping Plans
C12	Soil Erosion & Sedimentation Control Plan
C13	Soil Erosion & Sedimentation Control Notes & Details
C14	Landscape Plan
C15	Topographic Survey
C16	Soil Boring Logs
Attachments:	Shelby Township Sanitary Sewer Details
	Shelby Township Water Main Details
	Washington Township Storm Sewer Details

**ARCHITECTURAL SHEETS**

A0	General Project Information
A1	Floor Plan
A2	Reflected Ceiling Plan and Floor Finish Plan
A3	Roof Plan
A4	Exterior Elevations
A5	Building Sections
A6	Wall Sections
A7	Wall Sections
A7.1	Wall Sections
A8	Enlarged Plans
A9	Interior Elevations
A10	Schedules and Details
A11	Millwork and Details

**KITCHEN SHEETS**

K1	Architectural Kitchen Plans
K2	Architectural Kitchen Details and Elevations

## LIST OF DRAWINGS (Cont'd) –

FSE-1	Food Service Equipment Plan
FSE-2	Food Service Equipment Plumbing Rough In Plan
FSE-3	Food Service Equipment Electrical
FSE-4	Food Service Equipment Hood Notes
FSE-5	Food Service Equipment Hood Details

### STRUCTURAL SHEETS

S1	Foundation Plan and Details
S2	Upper Roof Framing Plan
S3	Lower Roof Framing and Lintel Plan
S4	Viewing Platform Plans and Details
S5	General Notes and Design Criteria

### PLUMBING SHEETS

P1	Underground Plumbing and Venting Plan
P2	Supply Plumbing Plan
P3	Mechanical and Plumbing Notes

### MECHANICAL SHEETS

M1	HVAC Plan and Enlarged Plan
----	-----------------------------

### ELECTRICAL SHEETS

E0	Electrical Site Plan
E1	Power Plan
E2	Lighting Plan
E3	Electrical Notes and Schedules

### FIRE PROTECTION SHEETS

FP-1	1 <sup>st</sup> Floor Fire Protection
FP-2	Attic and High Roof

## ADVERTISEMENT FOR BIDS

HCMA Project No. 509-16-532  
AEW Project No. 0215-0038

Stony Creek Landing

Stony Creek Metropark

Macomb County, Michigan

Huron-Clinton Metropolitan Authority

Sealed Bids will be received by the Huron-Clinton Metropolitan Authority, 13000 High Ridge Drive, Brighton, Michigan 48114-9058, until 2:00 P.M. (local time), Thursday, April 27, 2017 from prospective contractors able to show a reasonable acquaintance with and preparation for the proper performance of the work described herein.

State or federal funds are being used to assist in construction and relevant State or federal requirements will apply.

The work includes furnishing all labor, equipment and materials necessary to complete the work including Demolition of Bituminous Parking Lot and Bike Path, Construction of Concrete Walks and Footings, Bituminous Paving of Parking Area and Relocated Bike Path, Construction of Stony Landing Building, Open-Canopy Shelter and Viewing Platform, Landscaping and all incidental construction at Stony Creek Metropark in Macomb County, Michigan.

Bid Forms, Drawings and Specifications may be viewed and ordered after April 6, 2017. Complete sets of Bidding Documents shall be used in preparing bids. Neither the Owner nor its Consultants assume any responsibility for errors, omissions or misinterpretations resulting from the use of incomplete sets of Bidding Documents. Bid documents may be examined at:

MITN Purchasing Group	<a href="http://www.mitn.info">www.mitn.info</a>
Construction Association of Michigan	<a href="http://www.cam-online.com">www.cam-online.com</a>
McGraw Hill Dodge	<a href="http://construction.com">http://construction.com</a>
CMD Group	<a href="http://www.cmdgroup.com">www.cmdgroup.com</a>
Builders Exchange of Michigan	<a href="http://www.grbx.com">www.grbx.com</a>
Builders Exchange of Lansing	<a href="http://www.bxlansing.com">www.bxlansing.com</a>
Construction Journal	<a href="http://www.cncnewsonline.com">www.cncnewsonline.com</a>
Construction Data Company	<a href="http://www.cdcnews.com">www.cdcnews.com</a>
Washtenaw Contractors Association	<a href="http://www.wcaonline.org">www.wcaonline.org</a>

Bids shall be submitted on the form included in the bidding documents, and shall be accompanied by a Cashier's Check, Certified Check or Bid Bond underwritten by a surety licensed in the State of Michigan, in the amount of five percent (5%) of the bid, as a guarantee that the successful bidder will enter into a contract.

After the time of opening, no bid may be withdrawn for a period of ninety (90) days.

A Pre-Bid Meeting will be held on April 20, 2017 at 10:00 a.m. at the Stony Creek Metropark Boat Launch, 3505 Park Road, Washington Township, Michigan, 48094. Notify the Owner at least 48 hours in advance for special accommodations for physically handicapped or hearing impaired.

The Authority reserves the right to reject any or all bids, to waive irregularities and/or formalities and to make award in any manner deemed in the best interest of the Authority.

Inquiries regarding this project should be directed to Brett D. McDonald at (586) 726-1234.

Huron-Clinton Metropolitan Authority

George Phifer  
Director

SECTION 00050  
PROJECT DESCRIPTION

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Project; Work covered by Contract Documents.
- B. Project Manual Volumes
- C. Administrative and Procedural Sections
- D. Work by Owner

1.2 PROJECT – WORK COVERED BY CONTRACT DOCUMENTS:

- A. Work of a single general contractor for the construction of the Stony Creek Landing, Complete.

1.3 SCOPE OF WORK: Following is a general outline of the major work items in this Contract. It is not to be construed as a comprehensive description of work to be performed, and it does not relieve the Contractor from performing incidental and related work not listed. Quantities shown herein or on the drawings are approximate and are provided for general information purposes only. They may vary from the quantities actually encountered. The Contractor shall perform work in whatever quantities are necessary to meet lines, grades, dimensions and other requirements as necessary to comply with the Contract Documents. No change in compensation will be allowed if the actual quantities vary from those noted on the drawings.

- A. Selectively demolish the existing bituminous pavement bike path as described on the plans. Remove the existing parking lot bituminous pavement, concrete curb and gutter, and aggregate base. Remove the existing warming shelter building and foundation. Verify any hazardous materials in the existing warming shelter prior to demolition. Selectively remove trees and protect those to remain.
- B. Construct 8 inch water main addition, 8 inch sanitary sewer addition, 12 inch storm sewer additions with associated manholes and connections as described on the plans. Construct portland cement concrete walks, curbs, slabs, foundations and footings. Place and compact bituminous asphalt concrete and aggregate base in the parking area and bike trail as indicated on the plans.
- C. Construct a new 8,900 sft warming and restroom facility, open-canopy gathering structure, and fixed dock viewing platform. Construct all associated site development elements. Shape and prepare soils as shown. Install new lawn areas and refurbish existing lawn areas damaged during the construction process.

1.4 THE PROJECT MANUAL CONSISTS OF THE FOLLOWING VOLUMES:

- A. Volume A – Project Administration: Bidding and Contract Documents, General

Conditions, Supplemental General Conditions, and Division 1 Specifications.

- B. Volume 1 – Contained in Package No. 1: Drawings and Technical Specifications for Site Work.
- C. Volume 2 – Contained in Package No. 2: Technical Specifications for Building Construction and Site Details.

1.5 ADMINISTRATIVE AND PROCEDURAL SECTIONS APPLICABLE TO ALL CONTRACTS:

A. Bid Package

- 1. Work of this contract consists of, but is not limited to, the following:
  - a. Demolition of Bituminous Parking Lot and Bike Path and existing building, Construction of Concrete Walks and Footings, Bituminous Paving of Parking Area and Relocated Bike Path, Construction of Stony Creek Landing Building, Open-Canopy Shelter and Viewing Platform, Landscaping and all incidental construction, and related site work.
- 2. Related items not in this contractor's Scope of Work includes coordination of Primary Utilities, and other items including
  - a. DTE Electrical: Owner to coordinate and pay for installation of primary cable and transformer relocation by DTE on Contractor-provided conduit, transformer pad or other appurtenances.
  - b. SEMCO Gas: Owner to coordinate and pay for installation of gas main by SEMCO, up to and including gas meter.
- 3. Items not included in this contractor's Scope includes items listed as "By others," "By Owner," or "N.I.C."

PART 2 MATERIALS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION



SECTION 00100  
INSTRUCTIONS TO BIDDERS

PART 1 GENERAL

1.1 DEFINITIONS

- A. The Bidding Documents include the Advertisement for Bids, Instruction to Bidders, Bid Form, General Conditions, Contract Form, Bonds, Technical Specifications, and Drawings, including any Addenda issued prior to receipt of bids.
- B. The Addenda are written or graphic documents issued by the Owner or its authorized designee before the execution of the Contract that modify or interpret the Bidding Documents by additions, deletions, clarifications, or corrections.
- C. The Base Bid is the sum stated in the Bid for which Bidder offers to perform the Work described in the Bidding Documents as the Base Bid, to which Work may be added or from which Work may be deleted for sums stated in alternate bids.
- D. An alternate bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Bid Amount if the corresponding change in the Work, as described in the Bidding Documents, is accepted and incorporated in the Contract.

1.2 BIDDING PROCEDURE

- A. Bid shall be submitted in duplicate on forms provided.
- B. All blank spaces on the Bid Form shall be fully lined in, using ink or a typewriter, and Base Bid amount shall be in words as well as figures. Bidder's legal name shall be fully stated. The completed Bid Form shall be without interlineations, alternation, or erasure.
- C. The signature on the Bid Form shall be in longhand, written in ink, and executed by a principal duly authorized to make contracts. Bids which are not signed by individuals authorized to make them shall have attached thereto a Power of Attorney evidencing authority to sign the Bid in the name of the person for whom it was signed. Bids which are signed for a partnership should be signed by all of the partners or by an attorney-in-fact. If signed by an attorney-in-fact, there should be attached to the Bid a Power of Attorney evidencing authority to sign the Bid, executed by the partners. Bids which are signed for a corporation should have the correct corporate name thereof and the signature of the president or other authorized officer of the corporation manually written below the corporate name following the word "by", together with the stamp of the corporate seal. If such a Bid is manually signed by an official other than the president of the corporation, a certified copy of the resolution of the board of directors evidencing the authority of such official to sign the Bid should be attached to it. Such Bid should also bear the attesting signature of the secretary of the corporation and the impression of the corporate seal.
- D. Bid shall not contain any recapitulation of the Work to be done, and alternate bids will not be considered unless called for in the Bidding Documents.

- E. No oral, telegraphic, telephonic, e-mail or FAX bid will be considered.
- F. Proposals shall be enclosed in a sealed opaque envelope with Bidder's name clearly marked on outside. Envelope shall be labeled as follows:

Project No. 509-16-532  
"Stony Creek Landing"  
Stony Creek Metropark

- G. If bid is to be delivered by U.S. Postal Service or by means other than in-person delivery by the Bidder, the envelope shall be enclosed in a mailing envelope.

### 1.3 BIDDERS QUALIFICATIONS

- A. General Contractors - Refer to the General Conditions of the Contract.
- B. Other Contractors – Provide a list of Sub Contractors intended to be utilized for the completion of Stony Landing.
- C. Bidder shall submit the following along with bid demonstrating compliance with qualification requirements of Contractor and/or Installers:
  - 1. References from previous projects with the following information listed:
    - a. Project Name
    - b. Project Location
    - c. Date of Work
    - d. Contract Amount
    - e. Description of project
    - f. Contact Name and Telephone Number
  - 2. Current Financial Statement
  - 3. Letters of Certification
  - 4. Resumes of Key personnel
  - 5. Other Information as may be necessary to determine firm qualification.
- D. Failure to submit qualification information along with bid or demonstrate qualifications may result in rejection of bid.

### 1.4 INTERPRETATION OF CONTRACT DOCUMENTS

- A. Should Bidder find discrepancies, omissions, ambiguities or conflicts in the Bidding Documents or between such documents and the conditions at the site, or should Bidder be in doubt as to the true meaning of part of the Bidding Documents, Bidder may submit to the Owner a written request for an interpretation. Bidder submitting request shall be responsible for its prompt delivery.
- B. Interpretations of the Bidding Documents will be made only by Addenda. Neither the Owner nor Architect, Engineer or other Owner's Consultant will be responsible for oral

instructions. To receive consideration, requests for interpretations shall be made no later than four working days before the date set for the receipt of bids.

## 1.5 SPECIFICATION FORMAT

- A. Terminology: The Drawings and Specifications may include incomplete sentences, and the omission of such words and phrases as "the Contractor shall", "in accordance with", "as noted on the Drawings", "a", "the", and "all" are intentional; and such words or phrases shall be inferred where appropriate. Where sentences omit subject-pronouns, or where sentences are written in the imperative form (with or without such words as "shall", "will" or "must"), it shall be inferred that the Contractor shall perform the action specified, unless otherwise indicated. Where colons (:) occur, the words "shall be" or "shall" are to be supplied by inference. The term "Architect" shall refer to a Design Consultant as shown in the Project Directory and includes Aquatic Designer and Engineers.
- B. Where such words as "furnish", "supply", "build", "construct", "erect", and "install" occur, it shall mean that the Contractor shall furnish and install the item specified, and shall provide a complete and usable system, unless otherwise indicated. The work "provide" shall mean "furnish and install".
- C. Divisions and Sections: Divisions, and sections of the various divisions in the Specifications are for convenience and reference only, and do not necessarily define limits of responsibility of the various sub-trades. All work described in the Contract shall be provided by the Contractor regardless of disagreements by subcontractors over their respective areas of responsibility.

## 1.6 PREVAILING WAGE

- A. The rate of wages and fringe benefits to be paid to each class of construction mechanics by the Contractor and all of its subcontractors shall be not less than the wage and fringe benefit rates prevailing in Macomb County for State Funded Projects as published by the State of Michigan Department of Labor and Economic Growth, Wage and Hour Division. A copy of the current 2017 Prevailing Wage Rates for State Funded Projects for information purposes appends this section.
- B. Prevailing wage and fringe benefits to be paid on this project shall be as determined by the Commissioner of the Michigan Department of Labor pursuant to Act No. 166 of Public Acts of 1965.
- C. The Contractor shall be responsible for demonstrating compliance with this provision.
- D. The Contractor and all subcontractors shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing wage and fringe benefits rates prescribed under this contract.
- E. An accurate record showing the name and occupation of and the actual wages and benefits paid to each construction mechanic employed by the Contractor and all of its subcontractors shall be maintained and be available for reasonable inspection by the Owner.

## 1.7 SUBSTITUTIONS

- A. Proposals submitted shall be based upon the products, materials, and equipment named in the Proposal Documents.
- B. No substitution will be considered during the bidding period unless written request for approval has been submitted by Bidder and has been received by the Owner at least ten calendar days before the date of receipt of bids. Each such request shall include the name of the material or equipment for which approval is asked, including drawings, product data, performance, and test data and any other information necessary for an evaluation. It is the responsibility of the Bidder proposing the substitution to establish its merit. A statement shall be submitted with each substitution request agreeing that any and all other materials, equipment, labor, work or time necessitated by incorporation of the substitution in the work shall be provided at no cost to the Owner; Owner reserves the right to accept or reject the substitution whether or not said statement is included. Any later claims by the submitter of the proposal accepted by the Owner for an addition to the Contract Time or Contract Sum because of changes in Work necessitated by use of substitute products will not be considered. The Owner's decision of approval or disapproval of a proposed substitution will be final.
- C. If a proposed substitution is approved, such approval will be set forth in an addendum. Bidders shall not reply upon approvals made in any other manner.

## 1.8 ADDENDA

- A. Requirements contained in the Bidding Documents shall apply to all Addenda, and the general character of the Work called for in the Addenda shall be the same as specified in the Bidding Documents for similar Work, unless otherwise specified in the Addenda. Incidental Work necessitated by Addenda shall be included in the Bid, even though not particularly mentioned.
- B. Addenda will be mailed or delivered to all who are known by the Owner to have received a complete set of Bidding Documents.
- C. Addenda shall become a part of the Bidding Documents, and those portions pertaining to the Contract Documents will be made a part of the Contract.
- D. Before submitting a Bid, Bidder shall ascertain that Bidder has received all Addenda issued, and shall acknowledge their receipt on the Bid Form.

## 1.9 TIME OF START AND COMPLETION

- A. Bidder, if awarded the Contract, shall be required to agree to start Work immediately upon receipt of letter of notification of award of a Contract and a Notice to Proceed from the Owner, and to complete the Work described in the Contract Documents by the date stated on the Bid Form.

- B. Note that in accordance with the Bid Form and the General Conditions, liquidated damages will be assessed for failure to complete the Work by the specified date.

#### 1.10 BID GUARANTEE

- A. Bid shall be accompanied by a bid guarantee in the form of a bid bond made payable to the Huron-Clinton Metropolitan Authority in the amount stipulated in the Advertisement for Bids and General Conditions.

#### 1.11 PERFORMANCE, LABOR AND MATERIAL, AND MAINTENANCE BONDS

- A. The successful Bidder shall furnish bonds covering the faithful performance of the Contract and the payment of all obligations arising thereunder for a period of one year after date of acceptance. The successful Bidder shall furnish a bond for the maintenance of the Work against defective materials and workmanship for a period of two years from the date of acceptance. Refer to the General Conditions. The Contractor shall procure and pay for these bonds.
- B. The Bond Forms for the "Performance Bond," "Labor and Material Bond," and "Maintenance Bond," are provided herein. The amount shown for each shall be equal to 100 percent of the full amount of the Contract. Refer to the General Conditions for delivery date.

#### 1.12 INSURANCE

- A. The Architect/Engineer shall be indemnified and held harmless as set forth in the General Conditions to the extent permitted by law. The contractor shall name as additionally insured on the Commercial General Liability Policy and Automobile Policy in addition to the Huron-Clinton Metropolitan Authority the following:
  - 1. Anderson, Eckstein and Westrick, Inc.  
51301 Schoenherr Road  
Shelby Township, Michigan 48315
  - 2. Wolverine Fire Protection  
53194 Pontiac Trail  
Milford, Michigan 48381
  - 3. Kaiser Consulting  
16577 Edinburgh  
Clinton Township, Michigan 48038
  - 4. RLB Design  
5075 W Bloomfield Lake Road  
West Bloomfield Township, Michigan 48323
  - 5. Charter Township of Washington  
57900 Van Dyke Road  
Washington Township, Michigan 48094
  - 6. Charter Township of Shelby  
52700 Van Dyke Road  
Shelby Township, Michigan 48316

- B. None of the foregoing provisions shall deprive the Owner of any action, right or remedy otherwise available to them at common law.

1.13 WITHDRAWAL OF BIDS

- A. Bid may not be withdrawn after the time set for receipt of bids for the period as specified in the Advertisement for Bids.

1.14 PRE-BID MEETING

- A. A pre-bid Meeting will be held as specified in the Advertisement for Bids.

1.15 BIDDER'S SITE INSPECTION

- A. To examine the site, contact Stony Creek Metropark, at (568) 781-4242.

1.16 EXISTING CONDITIONS

- A. The Contractor shall reasonably verify the existing conditions identified in the Contract Documents. Exact location of underground utilities shall be determined prior to construction by contacting applicable agencies (Miss Dig: 1-800-482-7171).

PART 2 MATERIALS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

**2017 Prevailing Wage Rates for State Funded Projects**

For Informational Purposes Only Not For Use In Contract

**Macomb County**

Page 1 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Asbestos, Lead and Mold Abatement Laborer					
Asbestos, Lead and Mold Abatement Laborer 4 ten hour days @ straight time allowed Monday-Saturday, must be consecutive calendar days	MLDC	\$41.25	\$55.00	\$68.75	H H H X X X D Y
Asbestos, Lead and Mold Abatement, Hazardous Material Handler					
Asbestos, Lead and Mold Abatement, Hazardous Material Handler  4 ten hour days @ straight time allowed Monday-Saturday, must be consecutive calendar days	AS207	\$40.75	\$54.25	\$67.75	H H H X X X D Y
Boilermaker					
Boilermaker	BO169	\$54.70	\$81.08	\$107.45	H H H H H H D Y
Apprentice Rates:					
1st 6 months		\$40.31	\$59.49	\$78.67	
2nd 6 months		\$41.45	\$61.21	\$80.95	
3rd 6 months		\$42.57	\$62.88	\$83.19	
4th 6 months		\$43.69	\$64.57	\$85.43	
5th 6 months		\$44.81	\$66.24	\$87.67	
6th 6 months		\$48.63	\$72.50	\$96.36	
7th 6 months		\$49.32	\$73.01	\$96.69	
8th 6 months		\$51.58	\$76.40	\$101.21	

For Informational Purposes Only Not For Use In Contract

# Macomb County

Page 2 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Bricklayer					
Bricklayer, stone mason, pointer, cleaner, caulker	BR1	\$52.43	\$78.65	\$104.86	H H D H D D D D Y
Make up day allowed	Comment				
	Saturday for 5 day 8 hour week				
	Friday for 4 day 10 hour week				
	4 10s allowed M-TH				
	Apprentice Rates:				
	First 6 months	\$31.87	\$47.81	\$63.74	
	2nd 6 months	\$33.72	\$50.60	\$67.44	
	3rd 6 months	\$35.57	\$53.37	\$71.14	
	4th 6 months	\$37.42	\$56.14	\$74.84	
	5th 6 months	\$39.27	\$58.92	\$78.54	
	6th 6 months	\$41.12	\$61.70	\$82.24	
	7th 6 months	\$42.97	\$64.46	\$85.94	
	8th 6 months	\$44.82	\$67.24	\$89.64	
Carpenter					
Diver	CA 687 D	\$67.75	\$87.50	\$107.25	X X H X X H H D Y
Four 10s allowed M-Sat; double time due when over 12 hours worked per day					
Make up day allowed	Comment				
	Saturday				
Carpet and Resilient Floor Layer, (does not include installation of prefabricated formica & parquet flooring which is to be paid carpenter rate)	CA1045	\$51.11	\$72.33	\$93.54	X X H X X X X D Y
	Apprentice Rates:				
	1st 6 months	\$25.41	\$34.28	\$43.14	
	2nd 6 months	\$29.40	\$40.26	\$51.12	
	3rd 6 months	\$31.57	\$43.52	\$55.46	
	4th 6 months	\$33.74	\$46.77	\$59.80	
	5th 6 months	\$35.91	\$50.03	\$64.14	
	6th 6 months	\$38.08	\$53.28	\$68.48	
	7th 6 months	\$40.25	\$56.54	\$72.82	
	8th 6 months	\$42.42	\$59.79	\$77.16	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017



# Macomb County

Page 3 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Carpenter	CA687Z1	\$57.69	\$73.27	\$88.85	X X H X X H H D Y
four 10s allowed Mon-Sat; double time due when over 12 hours worked per day					
Make up day allowed	Comment				
	Saturdays				
Apprentice Rates:					
1st year		\$35.37	\$43.94	\$52.51	
3rd 6 months		\$37.86	\$47.21	\$56.56	
4th 6 months		\$40.32	\$50.45	\$60.57	
5th 6 months		\$42.81	\$53.72	\$64.62	
6th 6 months		\$45.29	\$56.98	\$68.66	
7th 6 months		\$47.77	\$60.24	\$72.70	
8th 6 months		\$50.26	\$63.51	\$76.75	
Piledriver	CA687Z1P	\$57.69	\$73.27	\$88.85	X X H X X H H D Y
Four 10s allowed Monday-Saturday; double time due when over 12 hours worked per day					
Make up day allowed	Comment				
	Saturday				
Cement Mason					
Cement Mason	br1cm	\$50.05	\$71.17	\$92.28	X X H H H H H D N
Apprentice Rates:					
1st 6 months		\$29.13	\$39.45	\$49.77	
2nd 6 months		\$31.20	\$42.54	\$53.87	
3rd 6 months		\$35.31	\$48.67	\$62.01	
4th 6 months		\$39.46	\$54.85	\$70.23	
5th 6 months		\$41.52	\$57.91	\$74.30	
6th 6 months		\$45.67	\$64.10	\$82.52	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered: 4/3/2017

# Macomb County

Page 4 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Cement Mason	CE514	\$48.55	\$68.40	\$88.24	H H D H H H D N
<b>Apprentice Rates:</b>					
	1st 6 months	\$28.17	\$38.03	\$47.88	
	2nd 6 months	\$30.14	\$40.98	\$51.82	
	3rd 6 months	\$34.09	\$46.91	\$59.72	
	4th 6 months	\$38.03	\$52.82	\$67.60	
	5th 6 months	\$39.99	\$55.75	\$71.52	
	6th 6 months	\$43.94	\$61.68	\$79.42	
<b>Drywall</b>					
Drywall Taper	PT-22-D	\$45.91	\$59.74	\$73.56	H H D H D D D Y
Four 10s allowed Monday-Thursday					
Make up day allowed Comment					
Friday make-up day for bad weather or holidays					
<b>Apprentice Rates:</b>					
	First 3 months	\$32.08	\$38.99	\$45.90	
	Second 3 months	\$34.85	\$43.14	\$51.44	
	Second 6 months	\$37.62	\$47.30	\$56.98	
	Third 6 months	\$40.38	\$51.44	\$62.50	
	4th 6 months	\$41.76	\$53.51	\$65.26	
<b>Electrician</b>					
Inside Wireman	EC-58-IW	\$61.78	\$82.23	\$102.67	H H H H H H D N
<b>Apprentice Rates:</b>					
	0-1000 hours	\$39.84	\$49.32	\$58.80	
	1000-2000 hours	\$41.84	\$52.32	\$62.79	
	2000-3500 hours	\$43.83	\$55.30	\$66.77	
	3500-5000 hours	\$45.83	\$58.30	\$70.76	
	5000-6500 hours	\$47.82	\$61.28	\$74.74	
	6500-8000 hours	\$51.81	\$67.28	\$82.73	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 5 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Sound and Communication Installer	EC-58-SC	\$40.25	\$53.87	\$67.48	H H H H H H D N
<b>Apprentice Rates:</b>					
	Period 1	\$26.64	\$33.45	\$40.26	
	Period 2	\$28.00	\$35.49	\$42.98	
	Period 3	\$29.36	\$37.53	\$45.70	
	Period 4	\$30.73	\$39.58	\$48.44	
	Period 5	\$32.09	\$41.62	\$51.16	
	Period 6	\$33.44	\$43.65	\$53.86	
<b>Elevator Constructor</b>					
Elevator Constructor	EL 36	\$56.46		\$94.99	D D D D D D D Y
Elevator Constructor					
Make up day allowed					
<b>Apprentice Rates:</b>					
	1st Year Apprentice	\$37.74		\$58.93	
	2nd Year Apprentice	\$41.90		\$66.94	
	3rd Year Apprentice	\$43.98		\$70.95	
	4th Year Apprentice	\$48.14		\$78.96	
<b>Glazier</b>					
Glazier	GL-357	\$49.50	\$65.23	\$80.95	H H H H H H D Y
If a four 10 hour day workweek is scheduled, four 10s must be consecutive, M-F.					
<b>Apprentice Rates:</b>					
	1st 6 months	\$33.77	\$41.63	\$49.49	
	2nd 6 months	\$35.35	\$44.00	\$52.65	
	3rd 6 months	\$38.49	\$48.71	\$58.93	
	4th 6 months	\$40.06	\$51.07	\$62.07	
	5th 6 months	\$41.64	\$53.43	\$65.23	
	6th 6 months	\$43.21	\$55.79	\$68.37	
	7th 6 months	\$44.78	\$58.15	\$71.51	
	8th 6 months	\$47.93	\$62.87	\$77.81	
<b>Heat and Frost Insulator</b>					
Spray Insulation - Qualified Senior Sprayer, application of all products	AS25S	\$29.04	\$42.35		X X X H H H H N

For Informational Purposes Only Not For Use In Contract

County: Statewide

Date Rendered:

4/3/2017

# Macomb County

Page 6 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Heat and Frost Insulator and Asbestos Worker					
Heat and Frost Insulators and Asbestos Workers	AS25	\$62.65	\$78.41	\$94.16	H H H H H H D Y
Four 10s must be worked for a minimum of 2 weeks consecutively, Monday thru Thursday. All hours worked in excess of 10 will be paid at double time. All hours worked on the fifth day, Monday thru Friday will paid at time and one-half.					
Comment					
Four 10s must be worked for a minimum of 2 consecutive weeks. OVERTIME is different on a four 10 week. OT is 2x for hours beyond 10. All hours on fifth day, M-F require time and one half. Sat first 8 hours, 1.5, all hours after 8 require double time.					
Apprentice Rates:					
1st Year		\$46.90	\$54.78	\$62.66	
2nd Year		\$50.05	\$59.50	\$68.96	
3rd Year		\$53.20	\$64.23	\$75.26	
4th Year		\$56.35	\$68.96	\$81.56	
Ironworker					
Fence, Sound Barrier & Guardrail erection/installation and Exterior Signage work	IR-25-F1	\$35.95	\$48.05	\$60.15	X X H X X X H D Y
Four ten hour work days may be worked during Monday-Saturday.					
Apprentice Rates:					
60% Level		\$25.39	\$32.65	\$39.91	
65% Level		\$26.71	\$34.58	\$42.44	
70% Level		\$28.03	\$36.51	\$44.98	
75% Level		\$29.35	\$38.42	\$47.50	
80% Level		\$30.67	\$40.35	\$50.03	
85% Level		\$31.99	\$42.28	\$52.56	
Siding, Glazing, Curtain Wall	IR-25-GZ2	\$47.16	\$58.82	\$70.48	X X H H H H D D Y
4 tens may be worked Monday thru Thursday @ straight time.					
Make up day allowed					
Comment					
Friday					
Apprentice Rates:					
Level 1		\$30.23	\$36.84	\$43.43	
Level 2		\$32.34	\$39.58	\$46.80	
Level 3		\$34.46	\$42.33	\$50.19	
Level 4		\$36.58	\$45.08	\$53.57	
Level 5		\$38.69	\$47.82	\$56.95	
Level 6		\$40.81	\$50.57	\$60.33	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 7 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Pre-engineered Metal Work	IR-25-PE-Z1	\$48.09	\$58.86	\$69.63	X X H X X X X D Y
Make up day allowed	Comment				
	4 tens allowed M-Th with Saturday make up day				
	<b>Apprentice Rates:</b>				
	Probation 1st Year	\$26.83	\$32.03	\$37.23	
	1st Level	\$28.96	\$34.92	\$40.88	
	2nd Level	\$28.96	\$34.92	\$40.88	
	3rd Level	\$31.08	\$37.79	\$44.50	
	4th Level	\$33.21	\$40.68	\$48.15	
	5th Level	\$35.33	\$43.55	\$51.77	
	6th Level	\$37.46	\$46.43	\$55.41	
Reinforced Iron Work	IR-25-RF	\$56.98	\$85.28	\$113.57	H H D H D D D D N
Make up day allowed					
	<b>Apprentice Rates:</b>				
	Level 1	\$37.63	\$54.83	\$72.77	
	Level 2	\$40.00	\$58.38	\$77.51	
	Level 3	\$42.36	\$63.05	\$83.73	
	Level 4	\$44.90	\$66.86	\$88.81	
	Level 5	\$47.43	\$69.53	\$92.37	
	Level 6	\$49.97	\$74.46	\$98.95	
Rigging Work	IR-25-RIG	\$62.83	\$93.95	\$125.06	H H H H H H D N
	<b>Apprentice Rates:</b>				
	Level 1 & 2	\$38.13	\$55.74	\$74.10	
	Level 3	\$40.96	\$61.12	\$81.26	
	Level 4	\$43.78	\$65.34	\$86.90	
	Level 5	\$46.61	\$69.59	\$92.56	
	Level 6	\$49.44	\$73.83	\$98.22	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 8 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Decking	IR-25-SD	\$54.79	\$81.86	\$108.92	X X H H H H D D Y
4 tens may be worked Monday thru Thursday @ straight time. If bad weather, Friday may be a make up day. If holiday celebrated on a Monday, 4 10s may be worked Tuesday thru Friday. Work in excess of 12 hours per day must be paid @ double time.					
Make up day allowed Comment					
Friday for 4 tens M-Th					
Saturday for 5 eights M-F					
Structural, ornamental, welder and pre-cast	IR-25-STR	\$62.96	\$94.11	\$125.26	H H H H H H D D Y
4 tens may be worked Monday thru Thursday @ straight time. If bad weather, Friday may be a make up day. If holiday celebrated on a Monday, 4 10s may be worked Tuesday thru Friday. Work in excess of 12 hours per day must be paid @ double time.					
Make up day allowed					
<b>Apprentice Rates:</b>					
Levels 1 & 2		\$38.13	\$56.87	\$75.60	
Level 3		\$40.96	\$61.12	\$81.26	
Level 4		\$43.78	\$65.34	\$86.90	
Level 5		\$46.61	\$69.59	\$92.56	
Level 6		\$49.44	\$73.83	\$98.22	
Level 7		\$52.26	\$78.06	\$103.86	
Level 8		\$55.09	\$82.31	\$109.52	
Industrial Door erection & construction	IR-25-STR-D	\$43.05	\$64.25	\$85.45	H H H H H H D D Y
Make up day allowed Comment					
Friday for bad weather when 4 tens scheduled for M-Th. If holiday celebrated on M, 4 tens may be worked T-F. Work in excess of 12 hours per day must be paid @ double time.					

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 9 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Laborer					
Construction Laborer, Demolition Laborer, Mason Tender, Carpenter Tender, Drywall Handler, Concrete Laborer, Cement Finisher Tender, Concrete Chute, and Concrete Bucket Handler	L33401-A-CC	\$44.35	\$63.10	\$81.85	H H H H H H D Y
If conditions beyond the employer/employee's control prevent one or more hours of working during Mon-Fri, the employer may choose to work up to 10 hour straight time weekdays. Work may be scheduled up to 10 hours per Mon-Fri for the purpose of reaching 40 hours @ straight time. Make up days may also include 8 hours of work on Saturdays @ straight time.					
Make up day allowed	Comment				
	Saturday				
Apprentice Rates:					
0-1,000 work hours		\$38.33	\$54.07	\$69.81	
1,001 - 2,000 work hours		\$39.53	\$55.87	\$72.21	
2,001 - 3,000 work hours		\$40.73	\$57.67	\$74.61	
3,001 - 4,000 work hours		\$43.15	\$61.30	\$79.45	
Signal Man (on sewer & caisson work), Air, Electric or Gasoline Tool Operator, Concrete Vibrator Operator, Acetylene Torch & Air Hammer Operator; Scaffold Builder, Caisson Worker	L33401-B-SB	\$44.62	\$63.51	\$82.39	H H H H H H D Y
If conditions beyond the employer/employee's control prevent one or more hours of working during Mon-Fri, the employer may choose to work up to 10 hour straight time weekdays. Work may be scheduled up to 10 hours per Mon-Fri for the purpose of reaching 40 hours @ straight time. Make up days may also include 8 hours of work on Saturdays @ straight time.					
Make up day allowed	Comment				
	Saturday				
Furnace Battery Heater Tender, Burning Bar & Oxy-Acetylene Gun	L33401-D-HH	\$44.86	\$63.87	\$82.87	H H H H H H D Y
If conditions beyond the employer/employee's control prevent one or more hours of working during Mon-Fri, the employer may choose to work up to 10 hour straight time weekdays. Work may be scheduled up to 10 hours per Mon-Fri for the purpose of reaching 40 hours @ straight time. Make up days may also include 8 hours of work on Saturdays @ straight time.					
Make up day allowed	Comment				
	Saturday				

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 10 of 28

Classification		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Expediter Man, Top Man and/or Bottom Man (Blast Furnace Work or Battery Work)	L33401-E-EX	\$45.64	\$65.04	\$84.43	H H H H H H D Y
<p>If conditions beyond the employer/employee's control prevent one or more hours of working during Mon-Fri, the employer may choose to work up to 10 hour straight time weekdays. Work may be scheduled up to 10 hours per Mon-Fri for the purpose of reaching 40 hours @ straight time. Make up days may also include 8 hours of work on Saturdays @ straight time.</p> <p>Make up day allowed    Comment Saturday</p>					
Cleaner/Sweeper Laborer; Furniture Laborer - unloading of furniture to the point of installation, the setting in place or relocation of furniture	L33401-F-CL	\$38.90	\$54.93	\$70.95	H H H H H H D Y
<p>If conditions beyond the employer/employee's control prevent one or more hours of working during Mon-Fri, the employer may choose to work up to 10 hour straight time weekdays. Work may be scheduled up to 10 hours per Mon-Fri for the purpose of reaching 40 hours @ straight time. Make up days may also include 8 hours of work on Saturdays @ straight time.</p> <p>Make up day allowed    Comment Saturday</p>					
Lansing Burner, Blaster & Powder Man; Air, Electric or Gasoline Tool Operator (Blast Furnace Work or Battery Work)	L334C	\$45.13	\$64.27	\$83.41	X X H X H H D Y
<p>Make up day allowed    Comment Saturday</p>					
Plasterer Tender, Plastering Machine Operator	LPT-1	\$44.35	\$63.10	\$81.85	H H H H H H D Y
<p>If conditions beyond the employer/employee's control prevent one or more hours of working during Mon-Fri, the employer may choose to work up to 10 hour straight time weekdays. Work may be scheduled up to 10 hours per Mon-Fri for the purpose of reaching 40 hours @ straight time. Make up days may also include 8 hours of work on Saturdays @ straight time.</p> <p>Make up day allowed    Comment Saturday</p>					
<b>Apprentice Rates:</b>					
1,001 - 2,000 hours		\$39.53	\$55.87	\$72.21	
2,001 - 3,000 hours		\$40.73	\$57.67	\$74.61	
3,001 - 4,000 hours		\$43.15	\$61.30	\$79.45	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017



# Macomb County

Page 11 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Laborer - Hazardous					
Class A performing work in conjunction with site preparation and other preliminary work prior to actual removal, handling, or containment of hazardous waste substances not requiring use of personal protective equipment required by state or federal regulations; or a laborer performing work in conjunction with the removal, handling, or containment of hazardous waste substances when use of personal protective equipment level "D" is required.	LHAZ-Z1-A	\$43.54	\$61.94	\$80.33	H H H H H H D Y
Make up day allowed	Comment				
	4 10s allowed M-Th or T-F; inclement weather makeup day Friday				
Apprentice Rates:					
	0-1,000 work hours	\$37.60	\$53.03	\$68.45	
	1,001-2,000 work hours	\$38.79	\$54.81	\$70.83	
	2,001-3,000 work hours	\$39.98	\$56.60	\$73.21	
	3,001-4,000 work hours	\$42.35	\$60.15	\$77.95	
Class B performing work in conjunction with the removal, handling, or containment of hazardous waste substances when the use of personal protective equipment levels "A", "B" or "C" is required.	LHAZ-Z1-B	\$44.54	\$63.44	\$82.33	H H H H H H D Y
Make up day allowed	Comment				
	4 10s allowed M-Th or T-F; inclement weather makeup day Friday				
Apprentice Rates:					
	0-1,000 work hours	\$38.36	\$54.17	\$69.97	
	1,001-2,000 work hours	\$39.59	\$56.01	\$72.43	
	2,001-3,000 work hours	\$40.83	\$57.87	\$74.91	
	3,001-4,000 work hours	\$43.30	\$61.58	\$79.85	
Laborer Underground - Tunnel, Shaft and Caisson					
Class I - Tunnel, shaft and caisson laborer, dump man, shanty man, hog house tender, testing man (on gas), and watchman.	LAUCT-Z1-1	\$37.87	\$48.66	\$59.44	X X X X X X D Y
Apprentice Rates:					
	0-1,000 work hours	\$33.05	\$41.43	\$49.80	
	1,001-2,000 work hours	\$34.02	\$42.88	\$51.74	
	2,001-3,000 work hours	\$34.98	\$44.32	\$53.66	
	3,001-4,000 work hours	\$36.91	\$47.21	\$57.52	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 12 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Class II - Manhole, headwall, catch basin builder, bricklayer tender, mortar man, material mixer, fence erector, and guard rail builder.	LAUCT-Z1-2	\$37.98	\$48.82	\$59.66	X X X X X X X D Y
<b>Apprentice Rates:</b>					
	0-1,000 work hours	\$33.14	\$41.56	\$49.98	
	1,001-2,000 work hours	\$34.10	\$43.00	\$51.90	
	2,001-3,000 work hours	\$35.07	\$44.45	\$53.84	
	3,001-4,000 work hours	\$37.01	\$47.37	\$57.72	
Class III - Air tool operator (jack hammer man, bush hammer man and grinding man), first bottom man, second bottom man, cage tender, car pusher, carrier man, concrete man, concrete form man, concrete repair man, cement invert laborer, cement finisher, concrete shoveler, conveyor man, floor man, gasoline and electric tool operator, gunnite man, grout operator, welder, heading dinky man, inside lock tender, pea gravel operator, pump man, outside lock tender, scaffold man, top signal man, switch man, track man, tugger man, utility man, vibrator man, winch operator, pipe jacking man, wagon drill and air track operator and concrete saw operator (under 40 h.p.).	LAUCT-Z1-3	\$38.04	\$48.91	\$59.78	X X X X X X X D Y
<b>Apprentice Rates:</b>					
	0-1,000 work hours	\$33.18	\$41.62	\$50.06	
	1,001-2,000 work hours	\$34.15	\$43.07	\$52.00	
	2,001-3,000 work hours	\$35.12	\$44.53	\$53.94	
	3,001-4,000 work hours	\$37.07	\$47.45	\$57.84	
Class IV - Tunnel, shaft and caisson mucker, bracer man, liner plate man, long haul dinky driver and well point man.	LAUCT-Z1-4	\$38.22	\$49.18	\$60.14	X X X X X X X D Y
<b>Apprentice Rates:</b>					
	0-1,000 work hours	\$33.32	\$41.83	\$50.34	
	1,001-2,000 work hours	\$34.30	\$43.30	\$52.30	
	2,001-3,000 work hours	\$35.28	\$44.77	\$54.26	
	3,001-4,000 work hours	\$37.24	\$47.71	\$58.18	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 13 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Class V - Tunnel, shaft and caisson miner, drill runner, keyboard operator, power knife operator, reinforced steel or mesh man (e.g. wire mesh, steel mats, dowel bars)	LAUCT-Z1-5	\$38.47	\$49.56	\$60.64	X X X X X X X D Y
<b>Apprentice Rates:</b>					
	0-1,000 work hours	\$33.50	\$42.10	\$50.70	
	1,001-2,000 work hours	\$34.50	\$43.60	\$52.70	
	2,001-3,000 work hours	\$35.49	\$45.09	\$54.68	
	3,001-4,000 work hours	\$37.48	\$48.07	\$58.66	
Class VI - Dynamite man and powder man.	LAUCT-Z1-6	\$38.80	\$50.05	\$61.30	X X X X X X X D Y
<b>Apprentice Rates:</b>					
	0-1,000 work hours	\$33.75	\$42.47	\$51.20	
	1,001-2,000 work hours	\$34.76	\$43.99	\$53.22	
	2,001-3,000 work hours	\$35.77	\$45.51	\$55.24	
	3,001-4,000 work hours	\$37.79	\$48.53	\$59.28	
Class VII - Restoration laborer, seeding, sodding, planting, cutting, mulching and topsoil grading and the restoration of property such as replacing mail boxes, wood chips, planter boxes and flagstones.	LAUCT-Z1-7	\$32.08	\$39.97	\$47.86	X X X X X X X D Y
<b>Apprentice Rates:</b>					
	0-1,000 work hours	\$28.71	\$34.91	\$41.12	
	1,001-2,000 work hours	\$29.38	\$35.92	\$42.46	
	2,001-3,000 work hours	\$30.06	\$36.94	\$43.82	
	3,001-4,000 work hours	\$31.41	\$38.97	\$46.52	
<b>Landscape Laborer</b>					
Landscape Specialist includes air, gas, and diesel equipment operator, skidsteer (or equivalent), lawn sprinkler installer on landscaping work where seeding, sodding, planting, cutting, trimming, backfilling, rough grading or maintenance of landscape projects occurs.	LLAN-Z1-A	\$28.98	\$40.04	\$51.09	X X H X X X H D Y
Sundays paid at time & one half. Holidays paid at double time.					

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 14 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Skilled Landscape Laborer: small power tool operator, lawn sprinkler installers' tender, material mover, truck driver when seeding, sodding, planting, cutting, trimming, backfilling, rough grading or maintaining of landscape projects occurs Sundays paid at time & one half. Holidays paid at double time.	LLAN-Z1-B	\$24.76	\$33.71	\$42.65	X X H X X X H D Y

## Marble Finisher

Marble Finisher A 4 ten workweek may be worked Monday thru Thursday or Tuesday thru Friday.	BR1-MF	\$43.48	\$54.29	\$65.10	H H D H D D D D Y
--	--------	---------	---------	---------	-------------------

### Apprentice Rates:

Level 1	\$19.04	\$25.12	\$31.20
Level 2	\$20.24	\$26.92	\$33.60
Level 3	\$27.01	\$33.96	\$40.90
Level 4	\$28.47	\$36.14	\$43.82
Level 5	\$29.99	\$37.84	\$45.70
Level 6	\$31.61	\$39.86	\$48.10
Level 7	\$33.30	\$41.59	\$49.87
Level 8	\$34.79	\$43.48	\$52.17

## Marble Mason

Marble Mason A 4 ten workweek may be worked Monday thru Thursday or Tuesday thru Friday.	BR1-MM	\$50.29	\$64.51	\$78.72	H H D H D D D D Y
---	--------	---------	---------	---------	-------------------

### Apprentice Rates:

Level 1	\$25.14	\$32.65	\$40.15
Level 2	\$28.20	\$36.49	\$44.78
Level 3	\$33.41	\$41.97	\$50.53
Level 4	\$36.15	\$45.66	\$55.17
Level 5	\$38.42	\$48.17	\$57.92
Level 6	\$42.07	\$53.56	\$65.05
Level 7	\$42.74	\$54.38	\$66.02
Level 8	\$43.67	\$55.78	\$67.88

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 15 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Operating Engineer					
Crane with boom & jib or leads 120' or longer	EN-324-A120	\$58.61	\$76.37	\$94.13	X X H H D D D Y
Comment Double time after 12 hours M-F					
Crane with boom & jib or leads 140' or longer	EN-324-A140	\$59.43	\$77.60	\$95.77	X X H H D D D Y
Work in excess of 12 per day M-F shall be paid at double time.					
Crane with boom & jib or leads 220' or longer	EN-324-A220	\$59.73	\$78.05	\$96.37	X X H H D D D Y
Work in excess of 12 per day M-F shall be paid at double time.					
Crane with boom & jib or leads 300' or longer	EN-324-A300	\$61.23	\$80.30	\$99.37	X X H H D D D Y
Work in excess of 12 per day M-F shall be paid at double time.					
Crane with boom & jib or leads 400' or longer	EN-324-A400	\$62.73	\$82.55	\$102.37	X X H H D D D Y
Work in excess of 12 per day M-F shall be paid at double time.					
Compressor or welding machine	EN-324-CW	\$47.76	\$60.10	\$72.43	X X H H D D D Y
Work in excess of 12 per day M-F shall be paid at double time.					
Forklift, lull, extend-a-boom forklift	EN-324-FL	\$55.07	\$71.06	\$87.05	X X H H D D D Y
Work in excess of 12 per day M-F shall be paid at double time.					
Fireman or oiler	EN-324-FO	\$46.73	\$58.55	\$70.37	X X H H D D D Y
Work in excess of 12 per day M-F shall be paid at double time.					
Regular crane, job mechanic, concrete pump with boom	EN-324-RC	\$57.75	\$75.08	\$92.41	X X H H D D D Y
Work in excess of 12 per day M-F shall be paid at double time.					

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 16 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Regular engineer, hydro-excavator, remote controlled concrete breaker Work in excess of 12 per day M-F shall be paid at double time.	EN-324-RE	\$56.78	\$73.63	\$90.47	X X H H D D D D Y
<b>Apprentice Rates:</b>					
	0-999 hours	\$46.35	\$58.48	\$70.61	
	1,000-1,999 hours	\$48.09	\$61.10	\$74.09	
	2,000-2,999 hours	\$49.82	\$63.68	\$77.55	
	3,000-3,999 hours	\$51.55	\$66.28	\$81.01	
	4,000-4,999 hours	\$53.29	\$68.90	\$84.49	
	5,000-5,999 hours	\$55.01	\$71.47	\$87.93	
<b>Operating Engineer - DIVER</b>					
Diver/Wet Tender/Tender/Rov Pilot/Rov Tender	GLF D	\$52.80	\$79.20	\$105.60	H H H H H H D N
<b>Operating Engineer - Marine Construction</b>					
Diver/Wet Tender, Engineer (hydraulic dredge)	GLF-1	\$72.32	\$93.82	\$115.32	X X H H H H D Y
Holiday pay = 2.5 times the straight hourly rate Make up day allowed <u>Subdivision of county</u> all Great Lakes, islands therein, & connecting & tributary waters					
Crane/Backhoe Operator, 70 ton or over Tug Operator, Mechanic/Welder, Assistant Engineer (hydraulic dredge), Leverman (hydraulic dredge), Diver Tender	GLF-2	\$70.82	\$91.57	\$112.32	X X H H H H D Y
Holiday pay = 2.5 times the straight hourly rate Make up day allowed <u>Subdivision of county</u> All Great Lakes, islands therein, & connecting & tributary waters					
Friction, Lattice Boom or Crane License Certification	GLF-2B	\$72.32	\$93.82	\$115.32	X X H H H H D Y
Holiday pay = 2.5 times the straight hourly rate Make up day allowed <u>Subdivision of county</u> All Great Lakes, islands, therein, & connecting & tributary waters					
Deck Equipment Operator, Machineryman, Maintenance of Crane (over 50 ton capacity) or Backhoe (115,000 lbs or more), Tug/Launch Operator, Loader, Dozer on Barge, Deck Machinery	GLF-3	\$66.27	\$84.75	\$103.22	X X H H H H D Y
Holiday pay = 2.5 times the straight hourly rate Make up day allowed <u>Subdivision of county</u> All Great Lakes, islands therein, & connecting & tributary waters					

For Informational Purposes Only Not For Use In Contract

County: Statewide

Date Rendered:

4/3/2017

# Statewide County

Page 17 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision	
Name	Description					
Deck Equipment Operator, (Machineryman/Fireman), (4 equipment units or more), Off Road Trucks, Deck Hand, Tug Engineer, & Crane Maintenance 50 ton capacity and under or Backhoe 115,000 lbs or less, Assistant Tug Operator		GLF-4	\$60.07	\$75.45	\$90.82	X X H H H H H D Y
Holiday pay = 2.5 times the straight hourly rate						
Make up day allowed						
<u>Subdivision of county</u>		All Great Lakes, islands therein, & connecting & tributary waters				
Operating Engineer Steel Work						
Forklift, 1 Drum Hoist		EN-324-ef	\$59.66	\$78.12	\$96.58	H H D H H H D D Y
Make up day allowed		Comment				
		4 10s allowed M-Th with Friday makeup day because of bad weather				
Crane w/ 120' boom or longer		EN-324-SW120	\$62.36	\$82.17	\$101.98	H H D H H H D D Y
Make up day allowed		Comment				
		4 10s allowed M-Th with Friday makeup day because of bad weather				
Crane w/ 120' boom or longer w/ Oiler		EN-324-SW120-O	\$63.36	\$83.67	\$103.98	H H D H H H D D Y
Make up day allowed		Comment				
		4 10s allowed M-Th with Friday makeup day because of bad weather				
Crane w/ 140' boom or longer		EN-324-SW140	\$63.54	\$83.94	\$104.34	H H D H H H D D Y
Make up day allowed		Comment				
		4 10s allowed M-Th with Friday makeup day because of bad weather				
Crane w/ 140' boom or longer W/ Oiler		EN-324-SW140-O	\$64.54	\$85.44	\$106.34	H H D H H H D D Y
Make up day allowed		Comment				
		4 10s allowed M-Th with Friday makeup day because of bad weather				
Boom & Jib 220' or longer		EN-324-SW220	\$63.81	\$84.35	\$104.88	H H D H H H D D Y
Make up day allowed		Comment				
		4 10s allowed M-Th with Friday makeup day because of bad weather				
Crane w/ 220' boom or longer w/ Oiler		EN-324-SW220-O	\$64.81	\$85.85	\$106.88	H H D H H H D D Y
Make up day allowed		Comment				
		4 10s allowed M-Th with Friday makeup day because of bad weather				
Boom & Jib 300' or longer		EN-324-SW300	\$65.31	\$86.60	\$107.88	H H D H H H D D Y
Make up day allowed		Comment				
		4 10s allowed M-Th with Friday makeup day because of bad weather				
Crane w/ 300' boom or longer w/ Oiler		EN-324-SW300-O	\$66.31	\$88.10	\$109.88	H H D H H H D D Y
Make up day allowed		Comment				
		4 10s allowed M-Th with Friday makeup day because of bad weather				

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 18 of 28

Classification		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Boom & Jib 400' or longer	EN-324-SW400	\$66.81	\$88.80	\$110.82	H H D H H H D D Y
Make up day allowed	Comment 4 10s allowed M-Th with Friday makeup day because of bad weather				
Crane w/ 400' boom or longer w/ Oiler	EN-324-SW400-O	\$67.81	\$90.35	\$112.88	H H D H H H D D Y
Make up day allowed	Comment 4 10s allowed M-Th with Friday makeup day because of bad weather				
Crane Operator, Job Mechanic, 3 Drum Hoist & Excavator	EN-324-SWCO	\$62.00	\$81.63	\$101.26	H H D H H H D D Y
Make up day allowed	Comment 4 10s allowed M-Th with Friday makeup day because of bad weather				
<b>Apprentice Rates:</b>					
	0-999 hours	\$49.22	\$62.96	\$76.70	
	1,000-1,999 hours	\$51.18	\$65.90	\$80.62	
	2,000-2,999 hours	\$53.15	\$68.85	\$84.56	
	3,000-3,999 hours	\$55.11	\$71.80	\$88.48	
	4,000-4,999 hours	\$57.07	\$74.74	\$92.40	
	5,000 hours	\$59.04	\$77.69	\$96.34	
Crane Operator w/ Oiler	EN-324-SWCO-O	\$63.00	\$83.13	\$103.26	H H D H H H D D Y
Make up day allowed	Comment 4 10s allowed M-Th with Friday makeup day because of bad weather				
Compressor or Welder Operator	EN-324-SWCW	\$54.55	\$70.46	\$86.36	H H D H H H D D Y
Make up day allowed	Comment 4 10s allowed M-Th with Friday makeup day because of bad weather				
Hoisting Operator, 2 Drum Hoist, & Rubber Tire Backhoe	EN-324-SWHO	\$61.36	\$80.67	\$99.98	H H D H H H D D Y
Make up day allowed	Comment 4 10s allowed M-Th with Friday makeup day because of bad weather				
Oiler	EN-324-SWO	\$53.14	\$68.34	\$83.54	H H D H H H D D Y
Make up day allowed	Comment 4 10s allowed M-Th with Friday makeup day because of bad weather				
Tower Crane & Derrick where work is 50' or more	EN-324-SWTD50	\$63.09	\$83.27	\$103.44	H H D H H H D D Y
Make up day allowed	Comment 4 10s allowed M-Th with Friday makeup day because of bad weather				
Tower Crane & Derrick 50' or more w/ Oiler	EN-324-SWTD50-O	\$64.09	\$84.77	\$105.44	H H D H H H D D Y
Make up day allowed	Comment 4 10s allowed M-Th with Friday makeup day because of bad weather				

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017



# Macomb County

Page 19 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Operating Engineer Underground					
Class I Equipment	EN-324A1-UC1	\$54.54	\$70.33	\$86.12	H H H H H H D Y
Apprentice Rates:					
	0-999 hours	\$43.26	\$54.31	\$65.36	
	1,000-1,999 hours	\$44.84	\$56.68	\$68.52	
	2,000-2,999 hours	\$46.43	\$59.07	\$71.70	
	3,000-3,999 hours	\$48.00	\$61.42	\$74.84	
	4,000-4,999 hours	\$49.58	\$63.79	\$78.00	
	5,000-5,999 hours	\$51.16	\$66.17	\$81.16	
Class II Equipment	EN-324A1-UC2	\$49.81	\$63.24	\$76.66	H H H H H H D Y
Class III Equipment	EN-324A1-UC3	\$49.08	\$62.14	\$75.20	H H H H H H D Y
Class IV Equipment	EN-324A1-UC4	\$48.51	\$61.29	\$74.06	H H H H H H D Y
Master Mechanic	EN-324A1-UMM	\$54.79	\$70.71	\$86.62	H H H H H H D Y
Painter					
Painter (8 hours of repaint work performed on Sunday shall be paid time & one half rate)	PT-22-P	\$44.32	\$57.60	\$70.88	H H D H D D D Y
Four 10s allowed Monday-Thursday with Friday makeup day if job down due to weather, holiday or other conditions beyond the control of the employer.					
Make up day allowed	Comment				
	Fridays for bad weather or holidays				
Apprentice Rates:					
	Year 1	\$31.04	\$37.68	\$44.32	
	Year 2	\$33.70	\$41.67	\$49.64	
	Year 3	\$36.35	\$45.64	\$54.94	
	Year 4	\$40.34	\$51.63	\$62.92	
	Fifth 6 months	\$38.36	\$48.79	\$59.21	
	Final 6 months	\$39.66	\$50.73	\$61.81	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Statewide County

Page 20 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Pipe and Manhole Rehab					
General Laborer for rehab work or normal cleaning and cctv work-top man, scaffold man, CCTV assistant, jetter-vac assistant	TM247	\$28.20	\$38.20		H H H H H H H N
Tap cutter/CCTV Tech/Grout Equipment Operator: unit driver and operator of CCTV; grouting equipment and tap cutting equipment	TM247-2	\$32.70	\$44.95		H H H H H H H N
CCTV Technician/Combo Unit Operator: unit driver and operator of cctv unit or combo unit in connection with normal cleaning and televising work	TM247-3	\$31.45	\$43.07		H H H H H H H N
Boiler Operator: unit driver and operator of steam/water heater units and all ancillary equipment associated	TM247-4	\$33.20	\$45.70		H H H H H H H N
Combo Unit driver & Jetter-Vac Operator	TM247-5	\$33.20	\$45.70		H H H H H H H N
Pipe Bursting & Slip-lining Equipment Operator	TM247-6	\$34.20	\$47.20		H H H H H H H N
Pipefitter					
Pipefitter	PF-636	\$69.83	\$91.03	\$108.23	H H D H D D D Y
Comment					
Four 10s allowed during the week preceding, following and/or the week of a holiday.					
Apprentice Rates:					
1st & 2nd periods		\$29.93	\$38.28	\$45.28	
3rd period		\$31.93	\$41.28	\$49.28	
4th period		\$33.18	\$43.16	\$51.78	
5th period		\$34.43	\$45.03	\$54.28	
6th period		\$35.68	\$46.90	\$56.78	
7th period		\$36.93	\$48.78	\$59.28	
8th period		\$37.93	\$50.28	\$61.28	
9th period		\$38.93	\$51.78	\$63.28	
10th period		\$40.36	\$53.92	\$66.14	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 21 of 28

<u>Classification</u>						
Name	Description		Straight Hourly	Time and a Half	Double Time	Overtime Provision
<b>Plasterer</b>						
Plasterer	BR1P		\$45.04	\$67.56	\$90.08	H H H H H H D N
Make up day allowed	Comment					
	Saturday					
	<b>Apprentice Rates:</b>					
	1st 6 months		\$32.11	\$48.17	\$64.22	
	2nd 6 months		\$33.40	\$50.10	\$66.80	
	3rd 6 months		\$34.69	\$52.04	\$69.38	
	4th 6 months		\$37.28	\$55.92	\$74.56	
	5th 6 months		\$39.87	\$59.81	\$79.74	
	6th 6 months		\$42.45	\$63.68	\$84.90	
Plasterer	PL67		\$44.72	\$60.11	\$75.50	H H H X D D D D N
	<b>Apprentice Rates:</b>					
	1st 6 months		\$29.33	\$37.02	\$44.72	
	2nd 6 months		\$30.87	\$39.34	\$47.80	
	3rd 6 months		\$32.41	\$41.64	\$50.88	
	4th 6 months		\$35.49	\$46.26	\$57.04	
	5th 6 months		\$38.56	\$51.16	\$63.76	
	6th 6 months		\$41.64	\$55.49	\$69.34	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered: 4/3/2017

# Macomb County

Page 22 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Plumber					
Plumber	PL-98	\$64.45	\$84.87	\$101.29	H H D H D D D D Y
Comment					
4 tens allowed M-Th or T-F; OT of time and one half required on 11th & 12th hour of any ten hour days					
Apprentice Rates:					
Period 1		\$19.93	\$26.43	\$32.93	
Period 2		\$23.90	\$31.40	\$38.90	
Period 3		\$30.60	\$39.19	\$47.77	
Period 4		\$31.23	\$40.13	\$49.03	
Period 5		\$32.39	\$41.87	\$51.35	
Period 6		\$33.54	\$43.59	\$53.65	
Period 7		\$34.69	\$45.32	\$55.95	
Period 8		\$35.86	\$47.07	\$58.29	
Period 9		\$37.01	\$48.80	\$60.59	
Period 10		\$38.16	\$50.53	\$62.89	
Roofer					
Commercial Roofer	RO-149-WOM	\$55.93	\$70.93	\$85.93	X X H X X H H D N
Apprentice Rates:					
new apprentice		\$37.34	\$45.07	\$52.80	
Apprentice 1		\$41.85	\$49.81	\$57.77	
Apprentice 2		\$42.36	\$50.57	\$58.79	
Apprentice 3		\$43.87	\$52.84	\$61.81	
Apprentice 4		\$45.37	\$55.09	\$64.81	
Apprentice 5		\$46.88	\$57.35	\$67.83	
Apprentice 6		\$48.29	\$59.47	\$70.65	
Apprentice 7		\$49.90	\$61.89	\$73.87	
Apprentice 8		\$51.41	\$64.15	\$76.89	
Sewer Relining					
Class I-Operator of audio visual CCTV system including remote in-ground cutter and other equipment used in conjunction with CCTV system.	SR-I	\$43.66	\$59.01	\$74.36	H H H H H H H D N

For Informational Purposes Only Not For Use In Contract

County: Statewide

Date Rendered: 4/3/2017

# Statewide County

Page 23 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Class II-Operator of hot water heaters and circulation system; water jetters; and vacuum and mechanical debris removal systems and those assisting.	SR-II	\$42.13	\$56.72	\$71.30	H H H H H H D N

## Sheet Metal Worker

Sheet Metal Worker A 4 10 schedule may be worked, 4 consecutive days Monday thru Friday.	SHM-80	\$64.50	\$82.20	\$99.89	H H D X H H H D Y
--	--------	---------	---------	---------	-------------------

### Apprentice Rates:

1st & 2nd Periods	\$40.99	\$48.95	\$56.92
3rd & 4th Periods	\$42.75	\$51.60	\$60.44
5th & 6th Periods	\$44.52	\$54.26	\$63.98
7th & 8th Periods	\$46.29	\$56.91	\$67.52

## Sprinkler Fitter

Sprinkler Fitter 4 ten hour days allowed Monday-Friday Double time pay due after 12 hours worked M-F	SP 704	\$66.92	\$85.66	\$104.39	H H D H D D D D Y
--	--------	---------	---------	----------	-------------------

### Apprentice Rates:

1st Period	\$29.27	\$37.92	\$46.57
2nd Period	\$43.13	\$52.86	\$62.59
3rd Period	\$45.29	\$56.10	\$66.91
4th Period	\$47.45	\$59.34	\$71.23
5th Period	\$49.62	\$62.59	\$75.57
6th Period	\$51.78	\$65.83	\$79.89
7th Period	\$53.94	\$69.07	\$84.21
8th Period	\$56.10	\$72.31	\$88.53
9th Period	\$58.27	\$75.57	\$92.87
10th Period	\$60.43	\$78.81	\$97.19

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 24 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Terrazzo					
Terrazzo Finisher A 4 ten workweek may be worked Monday thru Thursday or Tuesday thru Friday.	BR1-TRF	\$43.97	\$55.03	\$66.08	H H D H D D D D Y
Apprentice Rates:					
	Level 1	\$19.04	\$25.12	\$31.20	
	Level 2	\$20.24	\$26.92	\$33.60	
	Level 3	\$27.01	\$33.96	\$40.90	
	Level 4	\$28.47	\$36.14	\$43.82	
	Level 5	\$29.99	\$37.84	\$45.70	
	Level 6	\$31.61	\$39.86	\$48.10	
	Level 7	\$33.30	\$41.59	\$49.87	
	Level 8	\$34.79	\$43.48	\$52.17	
Terrazzo Worker A 4 ten workweek may be worked Monday thru Thursday or Tuesday thru Friday.	BR1-TRW	\$49.73	\$63.67	\$77.60	H H D H D D D D Y
Apprentice Rates:					
	Level 1	\$25.14	\$32.65	\$40.15	
	Level 2	\$28.20	\$36.49	\$44.78	
	Level 3	\$33.41	\$41.97	\$50.53	
	Level 4	\$36.15	\$45.66	\$55.17	
	Level 5	\$38.42	\$48.17	\$57.92	
	Level 6	\$42.07	\$53.56	\$65.05	
	Level 7	\$42.74	\$54.38	\$66.02	
	Level 8	\$43.67	\$55.78	\$67.88	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 25 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Tile					
Tile Finisher A 4 ten workweek may be worked Monday thru Thursday or Tuesday thru Friday.	BR1-TF	\$43.50	\$54.32	\$65.14	H H D H D D D D Y
Apprentice Rates:					
	Level 1	\$19.04	\$25.12	\$31.20	
	Level 2	\$20.24	\$26.92	\$33.60	
	Level 3	\$27.01	\$33.96	\$40.90	
	Level 4	\$28.47	\$36.14	\$43.82	
	Level 5	\$29.99	\$37.84	\$45.70	
	Level 6	\$31.61	\$39.86	\$48.10	
	Level 7	\$33.30	\$41.59	\$49.87	
	Level 8	\$34.79	\$43.48	\$52.17	
Tile Layer A 4 ten workweek may be worked Monday thru Thursday or Tuesday thru Friday.	BR1-TL	\$49.68	\$63.59	\$77.50	H H D H D D D D Y
Apprentice Rates:					
	Level 1	\$25.14	\$32.65	\$40.15	
	Level 2	\$28.20	\$36.49	\$44.78	
	Level 3	\$33.41	\$41.97	\$50.53	
	Level 4	\$36.15	\$45.66	\$55.17	
	Level 5	\$38.42	\$48.17	\$57.92	
	Level 6	\$42.07	\$53.56	\$65.05	
	Level 7	\$42.74	\$54.38	\$66.02	
	Level 8	\$43.67	\$55.78	\$67.88	
Truck Driver					
on all trucks of 8 cubic yard capacity or less (except dump trucks of 8 cubic yard capacity or over, tandem axle trucks, transit mix and semis, euclid type equipment, double bottoms and low boys)	TM-RB1	\$44.10	\$48.81		H H H H H H H H Y
of all trucks of 8 cubic yard capacity or over	TM-RB1A	\$44.20	\$48.96		H H H H H H H H Y
on euclid type equipment Make up day allowed	TM-RB1B	\$44.35	\$49.19		H H H H H H H H Y

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered: 4/3/2017

# Macomb County

Page 26 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Underground Laborer Open Cut, Class I					
Construction Laborer	LAUC-Z1-1	\$37.72	\$48.43	\$59.14	X X X X X X D Y
Apprentice Rates:					
	0-1,000 work hours	\$32.94	\$41.26	\$49.58	
	1,001-2,000 work hours	\$33.90	\$42.70	\$51.50	
	2,001-3,000 work hours	\$34.85	\$44.13	\$53.40	
	3,001-4,000 work hours	\$36.76	\$46.99	\$57.22	
Underground Laborer Open Cut, Class II					
Mortar and material mixer, concrete form man, signal man, well point man, manhole, headwall and catch basin builder, guard rail builders, headwall, seawall, breakwall, dock builder and fence erector.	LAUC-Z1-2	\$37.83	\$48.60	\$59.36	X X X X X X D Y
Apprentice Rates:					
	0-1,000 work hours	\$33.02	\$41.38	\$49.74	
	1,001-2,000 work hours	\$33.98	\$42.82	\$51.66	
	2,001-3,000 work hours	\$34.95	\$44.27	\$53.60	
	3,001-4,000 work hours	\$36.87	\$47.15	\$57.44	
Underground Laborer Open Cut, Class III					
Air, gasoline and electric tool operator, vibrator operator, drillers, pump man, tar kettle operator, bracers, rodger, reinforced steel or mesh man (e.g. wire mesh, steel mats, dowel bars, etc.), cement finisher, welder, pipe jacking and boring man, wagon drill and air track operator and concrete saw operator (under 40 h.p.), windlass and tugger man, and directional boring man.	LAUC-Z1-3	\$37.88	\$48.67	\$59.46	X X X X X X D Y
Apprentice Rates:					
	0-1,000 work hours	\$33.06	\$41.44	\$49.82	
	1,001-2,000 work hours	\$34.02	\$42.88	\$51.74	
	2,001-3,000 work hours	\$34.99	\$44.33	\$53.68	
	3,001-4,000 work hours	\$36.92	\$47.23	\$57.54	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017



# Macomb County

Page 27 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Underground Laborer Open Cut, Class IV					
Trench or excavating grade man.	LAUC-Z1-4	\$37.96	\$48.79	\$59.62	X X X X X X D Y
Apprentice Rates:					
	0-1,000 work hours	\$33.12	\$41.53	\$49.94	
	1,001-2,000 work hours	\$34.09	\$42.99	\$51.88	
	2,001-3,000 work hours	\$35.06	\$44.44	\$53.82	
	3,001-4,000 work hours	\$36.99	\$47.33	\$57.68	
Underground Laborer Open Cut, Class V					
Pipe Layer	LAUC-Z1-5	\$38.02	\$48.88	\$59.74	X X X X X X D Y
Apprentice Rates:					
	0-1,000 work hours	\$33.16	\$41.59	\$50.02	
	1,001-2,000 work hours	\$34.14	\$43.06	\$51.98	
	2,001-3,000 work hours	\$35.11	\$44.51	\$53.92	
	3,001-4,000 work hours	\$37.05	\$47.43	\$57.80	
Underground Laborer Open Cut, Class VI					
Grouting man, top man assistant, audio visual television operations and all other operations in connection with closed circuit television inspection, pipe cleaning and pipe relining work and the installation and repair of water service pipe and appurtenances.	LAUC-Z1-6	\$35.47	\$45.06	\$54.64	X X X X X X D Y
Apprentice Rates:					
	0-1,000 work hours	\$31.25	\$38.73	\$46.20	
	1,001-2,000 work hours	\$32.10	\$40.00	\$47.90	
	2,001-3,000 work hours	\$32.94	\$41.26	\$49.58	
	3,001-4,000 work hours	\$34.63	\$43.79	\$52.96	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered:

4/3/2017

# Macomb County

Page 28 of 28

<u>Classification</u>		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description				
Underground Laborer Open Cut, Class VII					
Restoration laborer, seeding, sodding, planting, cutting, mulching and topsoil grading and the restoration of property such as replacing mail boxes, wood chips, planter boxes, flagstones etc.	LAUC-Z1-7	\$32.09	\$39.99	\$47.88	X X X X X X X D Y
Apprentice Rates:					
0-1,000 work hours		\$28.72	\$34.93	\$41.14	
1,001-2,000 work hours		\$29.39	\$35.93	\$42.48	
2,001-3,000 work hours		\$30.07	\$36.95	\$43.84	
3,001-4,000 work hours		\$31.42	\$38.98	\$46.54	

For Informational Purposes Only Not For Use In Contract

County: Macomb

Date Rendered: 4/3/2017

SECTION 00220  
GEOTECHNICAL DATA

1.1 DESCRIPTION

- A. The Owner has conducted soils investigations of the proposed site. Copies of Soil Test Boring reports are bound at the end of the civil plan sheets

1.2 USE OF DATA

- A. The Soil Boring Reports are available for Bidder's information, but are not a warranty of subsurface conditions.
- B. Bidder shall visit the site and become acquainted with all existing conditions. Prior to bidding, Bidder may make his own subsurface investigations to satisfy himself as to site and subsurface conditions, subject to the following conditions:
  - 1. All such investigations shall be performed only under time schedules and arrangements approved in advance in writing by the Owner.
  - 2. The sites of the investigation shall be restored to the respective conditions that existed before such investigations were undertaken; and
  - 3. Bidder shall provide insurance protecting and holding the Owner and its agents harmless from claims due to bodily injury, including death, and to property damage to Owner's or other's property arising from such investigations.
- C. Bidder shall assume full responsibility for interpreting boring data and for the conclusions drawn from the information furnished, and from inspection of the site.

END OF SECTION



BIDDER'S NAME: \_\_\_\_\_

LEGAL ADDRESS: \_\_\_\_\_

\_\_\_\_\_

TELEPHONE NO.: \_\_\_\_\_ FAX NO.: \_\_\_\_\_

E-MAIL: \_\_\_\_\_

BID FOR: Stony Creek Landing  
Stony Creek Metropark  
Macomb County, Michigan  
Huron-Clinton Metropolitan Authority

BID OPENING: April 27, 2017, at 2:00 P.M. (Local Time)

TO: Huron-Clinton Metropolitan Authority  
13000 High Ridge Drive  
Brighton, MI. 48114-9058

Gentlemen:

The undersigned, as Bidder, hereby declares that this Bid is made in good faith without fraud or collusion with any persons bidding, that he has examined the Drawings, Specifications and location of the Work described herein and is fully informed as to the nature of the Work and the conditions relating to its performance.

The Bidder acknowledges that he has not received or relied upon any representations or warranties of any nature whatsoever from the Huron-Clinton Metropolitan Authority, its agents or employees as to any conditions to be encountered in accomplishing the Work (specifically including subsoil conditions), and that this Bid is based solely upon the Bidder's own independent judgment.

The undersigned proposes to construct a Stony Creek Landing to include: Demolition of Bituminous Parking Lot and Bike Path and existing building, Construction of Concrete Walks and Footings, Bituminous Paving of Parking Area and Relocated Bike Path, Construction of Stony Creek Landing Building, Open-Canopy Shelter and Viewing Platform, Landscaping and related work; and to provide incidental and related items necessary to complete this Work. Work shall be performed in accordance with Drawings and Specifications entitled "Stony Creek Landing, Stony Creek Metropark, Macomb County, Michigan", HCMA Project No. 509-16-532, AEW Project No. 0215-0038.



The undersigned further proposes: to provide all labor, supplies, new and current materials, transportation and equipment required to perform the Work described herein; and for the Unit Prices stated on the itemized Bid, to complete the Work described herein in strict accordance with the Advertisement, the Contract General Conditions, Specifications, Drawings, Addenda (if any), and other Contract Documents, all of which are incorporated in this Bid as if set forth at length herein.

**Base Bid**

ITEMIZED BID

<u>ITEM OF WORK</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
1. Bonds, Insurance and Initial Set-up Expense, Max 3%	1	LS	\$ _____	\$ _____
2. Demo Existing Building	1	LS	_____	_____
3. Remove Culvert	105	LF	_____	_____
4. Remove Conc Curb and Gutter	3,118	LF	_____	_____
5. Remove Conc Pavement	4,144	SF	_____	_____
6. Remove Tree	18	EA	_____	_____
7. Remove Bituminous Pavement	25,976	SY	_____	_____
8. Remove and Salvage Flag Pole	1	EA	_____	_____
9. Remove Light Pole and Base	1	EA	_____	_____
10. Relocate Bench	6	EA	_____	_____
11. Relocate Sign	1	EA	_____	_____
12. Project Sign	1	EA	_____	_____
13. 4' Dia Sanitary Manhole	5	EA	_____	_____
14. 8" PVC Truss Pipe	1,193	LF	_____	_____
15. 6" Sanitary Lead	69	LF	_____	_____
16. 8" Gate Valve in Well	1	EA	_____	_____
17. 6" Std Hydrant Assembly	1	EA	_____	_____
18. Lower Exist. 8" Water Main	1	LS	_____	_____
19. 8" D.I. Water Main	731	LF	_____	_____
20. 6" D.I. Water Main	77	LF	_____	_____
21. 2" Copper Water Service	77	LF	_____	_____





<u>ITEM OF WORK</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
22. Gas Service	1	LS		
23. 4' Dia Catch Basin (Pavt.)	3	EA		
24. 4' Dia Catch Basin (Field)	2	EA		
25. Adjust Drainage Structure	9	EA		
26. Adjust Hydrant and Stop Box	1	EA		
27. Provide 1040 Frame and Cover	6	EA		
28. Provide Type "N" Cover	2	EA		
29. CSP (16 GA)	10	LF		
30. 12" C-76, CL-IV	381	LF		
31. 8" Sch 40 PVC	72	LF		
32. 6" Sch 40 PVC	300	LF		
33. Cleanout with PVC cap	4	EA		
34. Cleanout with Bronze cap	3	EA		
35. Drainage Structure Tap	2	EA		
36. 6" Edge Drain	276	LF		
37. Sight Lighting	1	LS		
38. ADA Parking Sign	18	EA		
39. Striping	1	LS		
40. Earthwork	1	LS		
41. Subgrade Undercut	200	CY		
42. Concrete Curb and Gutter, Mountable	1,739	LF		
43. MDOT Detail "M" Curb	106	LF		
44. Curb Face Conc Walk, 7' Wide	510	SF		
45. 4" Conc Sidewalk	4,304	SF		
46. 8" Conc Pavement	620	SY		
47. Fire Lane Surface 4" Exposed Aggregate	820	SY		
48. Concrete	610	SF		
49. 6" Concrete Pav't with Thickened Edge	2,456	SF		



Huron-Clinton Metropolitan Authority  
Stony Creek Landing  
HCMA Project No. 509-16-532  
AEW Project No. 0215-0038

	<u>ITEM OF WORK</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
50.	Concrete Spillway	1	EA		
51.	21AA Aggregate Base, 10" Thick	22,896	SY		
52.	21AA Limestone Shoulder	47	SY		
53.	21" Aggregate Base, 6" Thick	3,411	SY		
54.	3" Dia. Cobblestone, 4" Thick	150	SF		
55.	Bituminous Leveling Course, MDOT 3C (3" Thick)	3,624	TON		
56.	Bituminous Wearing Course, MDOT 13A (2" Thick)	2,416	TON		
57.	Bituminous Leveling, 13A (2" Thick) Pathway	342	TON		
58.	Bituminous Wearing, 13A (1-1/2" Thick) Pathway	256	TON		
59.	Site Lighting	1	LS		
60.	4' High Decorative Aluminum Fence	266	LF		
61.	Tree Protection	18	EA		
62.	Silt Fence	2,650	LF		
63.	Sack Type Inlet Filer	4	EA		
64.	Silt Fence at Catch Basin	8	EA		
65.	Picnic Shelter and Footings	1	LS		
66.	Red Sunset Maple	4	EA		
67.	Norway Spruce	11	EA		
68.	Weigela	10	LS		
69.	Potentilla	31	EA		
70.	Burning Bush	3	EA		
71.	Cotoneaster	18	EA		
72.	Juniper	28	EA		
73.	Karl Foerster	24	EA		
74.	Flag Pole and Footing	1	EA		
75.	Dumpster Enclosure	1	LS		
76.	Viewing Platform	1	LS		



Huron-Clinton Metropolitan Authority  
Stony Creek Landing  
HCMA Project No. 509-16-532  
AEW Project No. 0215-0038

<u>ITEM OF WORK</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
77. Viewing Platform Piles	325	LF		
78. Bottle Filling Station	2	EA		
79. Trash Bin	5	EA		
80. Recycle Bin	5	EA		
81. Bike Rack (RR5H-111)	2	EA		
82. Bike Rack (RR3H-63)	1	EA		
83. Bike Repair Station	1	EA		
84. Park Bench	3	EA		
85. ADA Accessible Binocular	1	EA		
86. Binocular	1	EA		
87. 12" Dia. Piers and Rope	128	LF		
88. Pier Clusters	5	EA		
89. Restoration	1	LS		
90. Building – Foundations and Flat Work	1	LS		
91. Building – Mechanical and Plumbing Trades	1	LS		
92. Building – Electrical Trades	1	LS		
93. Building – General Trades	1	LS		
94. Building – Kitchen Equipment	1	LS		
95. Building – Fire Protection	1	LS		
96. Building – Interior Decoration Allowance	1	LS	\$5,000.00	\$5,000.00
<u>Grant No. TF14-0127 Items:</u>				
97. Red Maple	2	EA		
98. ADA Grill	1	EA		

**Total Bid Amount**      \$ \_\_\_\_\_



**Base Bid**

\_\_\_\_\_ DOLLARS (\$\_\_\_\_\_)

**Addenda**

The Bidder acknowledges the receipt of the following Addenda:

Addendum No. \_\_\_\_\_, Dated \_\_\_\_\_

Addendum No. \_\_\_\_\_, Dated \_\_\_\_\_

Addendum No. \_\_\_\_\_, Dated \_\_\_\_\_

Addendum No. \_\_\_\_\_, Dated \_\_\_\_\_

**Bidder Qualifications**

Bidder Qualification Information is submitted herewith in accordance with Instructions to Bidders 1.03 C.

☐ (Check Box if Included)

**Alternates**

The Bidder agrees to perform the following Work, in accordance with Section 01030, "Alternates," for the following amounts to be added to or deducted from the Base Bid:

**Deduct Alternate No. 1 – Asphalt Shingles in lieu of Standing Seam**\_\_\_\_\_

Deduct \_\_\_\_\_ DOLLARS (\$\_\_\_\_\_)

The undersigned encloses a (Certified Check) (Cashier's Check) (Bid Bond) (Cross out all but one) in the amount of \_\_\_\_\_, made out to Huron-Clinton Metropolitan Authority. This Bid will not be withdrawn for a period of ninety (90) days from the date of bid opening. If, during this ninety (90) day bid acceptance period, a letter of notification of Contract approval is sent to the legal address stated above, the undersigned agrees to deliver within the fifteen (15) succeeding days surety bonds in the form specified, or will forfeit the enclosed certified check, cashier's check or bid bond accompanying this Bid.

If awarded the Contract, the undersigned agrees that time is an essential condition of the Contract and will totally complete the work on or before May 4, 2018. Should the undersigned





fail to complete the work by this date, it is agreed that the sum of One Thousand Five Hundred and Fifty Dollars (\$1,550.00) per day will be deducted from the Contract Amount for each and every calendar day the work is incomplete. It is understood and agreed that this deduction from the Contract Amount is not a penalty, but represents liquidated damages suffered by the Authority and is so fixed on a per diem basis because of the extreme difficulty of ascertaining the true and full amount of damage the Authority will sustain if the work of the undersigned is not completed by the above date.

This Bid has been prepared with the knowledge that control of the project site and coordination of the work of this Contract with the work of others will be subject to the direction of the Authority. The undersigned agrees that cooperation with other contractors, the Engineer and the Authority in coordinating the work is offered as a part of this Bid.

If the undersigned enters into the Contract in accordance with this Bid, or if this Bid is rejected, then the accompanying check or bid bond will be returned to the undersigned.

In submitting this Bid, it is understood that the right is reserved by the Authority to accept any bid, or reject any or all bids, to waive irregularities and/or formalities in any bid and to make award in any manner deemed in the best interest of the Authority

SIGNED AND SEALED THIS \_\_\_\_ DAY OF \_\_\_\_\_, \_\_\_\_.

Respectfully Submitted,

BY: \_\_\_\_\_  
Authorized Signature of Bidder

TITLE: \_\_\_\_\_



LEGAL STATUS OF BIDDER

(The Bidder shall check and fill out the appropriate form).

( ) A Corporation, duly organized and doing business under the laws of the State of \_\_\_\_\_, for whom any one of the following persons is authorized to execute Contracts and other legal documents:

NAME

TITLE

_____	_____
_____	_____
_____	_____

Federal Tax I.D. Number: \_\_\_\_\_

( ) A Partnership, all members of which, with addresses, are:

NAME

ADDRESS

_____	_____
_____	_____
_____	_____

Federal Tax I.D. Number: \_\_\_\_\_

( ) An Individual, whose signature is affixed to this Bid:

NAME

ADDRESS

_____	_____
	_____

Federal Tax I.D. or Social Security Number: \_\_\_\_\_



GENERAL CONDITIONS  
For  
CONSTRUCTION CONTRACTS  
Of The  
HURON-CLINTON METROPOLITAN AUTHORITY

February, 2015

1. BIDS

Bids shall be made upon the Bid Form provided herein. The Bid shall include, as a minimum, complete Bid Form, bid guarantee, and other items as specifically required.

The Bid shall be enclosed in a sealed envelope marked with the word "BID", and with the Project Number and descriptive name of the Project.

The Advertisement, Bid, General Conditions, Drawings, Addenda (if any), Contract Form, and other items as described herein, are incorporated in the Bid as if set forth at length in the Bid.

2. NAME, ADDRESS AND STATUS OF BIDDER

Each Bid shall contain the full name and address of the Bidder. In case of a partnership, the name and address of each partner shall be stated in the Bid. A corporation Bidder shall name the State in which its articles of incorporation are held and shall give the titles of the officials having authority under the Bylaws to sign contracts. Any person signing a Bid as an agent shall submit legal evidence of his authority to do so.

3. BID ACCEPTANCE

Bids will not be accepted after the time designated for the opening of bids. The Bidder shall accept full responsibility for delivery of the Bid prior to the appointed hour for opening same and shall assume the risk of late or non- delivery regardless of the manner it employs for the transmittal thereof. Bidder shall be solely responsible for all costs associated with Bidder's preparation of bid.

The Authority reserves the right to reject any and all Bids, to waive minor irregularities, to accept the Bid which the Authority determines, in its sole discretion, to be in its best interest, or to negotiate with any or all of the Bidders. Notwithstanding any preliminary award of this Contract, the Authority shall have the power to accept any Bid until the final execution of Contract Documents, during the bid acceptance period.

4. BID DEPOSIT

Each Bid shall be accompanied by a Certified Check, Cashier's Check or Bid Bond underwritten by a surety licensed in the State of Michigan, in favor of the Huron-Clinton Metropolitan Authority, in the amount of five percent (5%) of the bid, which will be forfeited to the Authority as liquidated damages in case of failure of the successful Bidder to enter into a Contract according to the Bid and to furnish Surety Bonds and Insurance as specified in the Contract Documents.

5. BIDDER'S QUALIFICATIONS

It is the intention of the Authority to award this Contract to a Contractor fully capable, both financially and as regards experience, to perform and complete

the Work in a satisfactory manner. The Bidder represents that it is qualified to perform the work in a safe and workmanlike manner and will comply with the laws and regulations of all authorities having jurisdiction, included but not limited to applicable health, safety, environmental and labor regulations.

No Bid will be accepted for the Work described from parties who cannot show a reasonable acquaintance with and preparation for the proper performance of such Work. Evidence of such competency shall be furnished by the Contractor and for any of its subcontractors, as stipulated in the Contract Documents, or if requested by the Engineer, and such Bidder must be in a position to immediately submit the following information:

- A. Bidder's current, complete financial statement.
- B. List of equipment available for this project.
- C. A description of comparable projects satisfactorily performed and/or currently under construction.
- D. Bidder's performance and experience record.
- E. A list of at least 5 references familiar with the Bidder's work performance, including names and telephone numbers.
- F. Such additional information as will satisfy the Authority that the Bidder is adequately prepared to fulfill the Contract.

In lieu of the above, the Authority will accept a current letter of Prequalification from the Michigan Department of Transportation for the classifications of work required on this project.

The Authority's previous contracting experience with the Bidder (particularly with respect to quality of work and timeliness of completion) will be considered in evaluating the Bidder's qualification.

## 6. PREVAILING WAGES (BIDS OVER \$100,000)

For all projects for which the Lump Sum Bid Amount, Total Bid Amount or Base Bid Amount is One Hundred Thousand Dollars (\$100,000) or greater, the rates of wages and fringe benefits to be paid to each class of construction mechanics by the Contractor and all of its subcontractors shall be not less than the wage and fringe benefit rates prevailing in the locality in which the work is to be performed. Prevailing wage and benefit rates to be paid on this project shall be as determined by the Commissioner of the Michigan Department of Labor pursuant to Act No. 166 of Public Acts of 1965. The Contractor shall be responsible for demonstrating compliance with this provision.

## 7. INTERPRETATION OF CONTRACT DOCUMENTS

If any Bidder is in doubt as to the true meaning of any part of the Drawings, Specifications or Contract Documents, it may submit to the Engineer a written request for interpretation thereof. Any interpretation made in response to such query will be provided to each prospective Bidder.

The Authority will not be responsible for any other explanation or interpretation of the Contract Documents.

## 8. BONDS AND AGREEMENT

The Bidder to whom the award is made will be required to enter into a written Contract, in the form herein annexed, executed in 2 copies; and will be required to furnish 2 Bonds, a Performance Bond and a Labor and Material Bond.

Bonds shall be issued by a recognized Surety Company authorized to do business in the State of Michigan (the "Surety"). Bonds shall be satisfactory to the Authority, each on its respective form herein annexed, and to the full amount of the Contract. The Bidder to whom award is made shall furnish the Performance Bond, the Labor and Material Bond, and in addition any other Bond which may be required by the Contract Documents in such amount as may be indicated in the Contract Documents and on its form herein annexed, all within 15 days after being notified of the acceptance of its bid.

## 9. PROGRESS SCHEDULE

Within 15 days after award of the Contract, the Contractor shall deliver to the Authority a Progress Schedule showing the proposed dates of commencement and completion of each of the various subdivisions of work required in the Contract. Failure of the Contractor to maintain job progress according to the Progress Schedule will result in progress payments being withheld.

Progress meetings shall be held at the project site at regular intervals as determined by the Engineer. The meetings shall be attended by the Engineer and representatives of the Contractor and the Authority, and other interested parties as may be required, and as scheduled in the meeting notices.

The Contractor shall provide the Engineer with 5 days notice prior to commencing work, unless otherwise indicated. No work will be permitted on Sundays or Holidays. Saturday work will be permitted only upon prior approval of the Engineer.

## 10. INSURANCE

The Contractor and each Subcontractor will be required to carry Workers Compensation Insurance, Commercial General Liability Insurance on an Occurrence form, and Auto Liability Insurance (collectively, "Insurance"). No work shall be performed on the site of the Contract until after such Insurance is obtained by the Contractor and approved by the Authority. The contractor, or any of their subcontractors shall keep such insurance in force during the entire life of this contract. If any of the above coverages expire during the term of this contract, the Contractor shall deliver renewal certificates and endorsements to the Authority at least ten (10) days prior to the expiration date. If coverage under any policy of Insurance is allowed to lapse during the performance of the Contract, all work shall cease immediately until such Insurance coverage is replaced or reinstated. Nothing contained in these insurance requirements shall be construed as limiting the extent of the Contractor's responsibility for payment of damages resulting from the Contractors' operations under the Contract. All deductibles and SIR's are the responsibility of the Contractor.

Commercial General Liability Insurance for the Contractor and each Subcontractor on an "Occurrence Basis" shall be in an amount not less than One Million Dollars (\$1,000,000) Bodily Injury Liability and in an amount not less than Five Hundred Thousand Dollars (\$500,000) Property Damage Liability, or One Million Dollars (\$1,000,000) Combined Single Limit Bodily Injury and Property Damage Liability. Coverage shall include the following extensions: (A) Contractual Liability; (B) Products and Completed Operations; (C) Independent Contractors Coverage; (D) Broad Form General Liability Extensions or equivalent, if not already included.

Separate Auto Liability Insurance for the Contractor and each Subcontractor shall be in an amount not less than Five Hundred Thousand Dollars (\$500,000) each person and One Million Dollars (\$1,000,000) each occurrence Bodily Injury Liability and Five Hundred Thousand Dollars (\$500,000) Property Damage Liability or One Million Dollars (\$1,000,000) Combined Single Limit Bodily Injury and Property Damage Liability. The Automobile Liability policy shall cover bodily injury and property damage arising out of the ownership, maintenance or use of any motor vehicle, including owned, non-owned or hired vehicles.

For all marine work, the Contractor will be required to carry Marine General Liability Insurance in an amount not less than One Million Dollars (\$1,000,000) and Protection and Indemnity Liability Insurance in an amount not less than One Million Dollars (\$1,000,000).

Worker's Compensation Insurance shall be at statutory limits including Employer's Liability for \$100,000 minimum to cover employee injuries or disease compensative, under the worker's compensation statutes of the state of Michigan and the state in which work is conducted under this Contract, under disability benefit laws (if any), or under federal compensation acts such as U.S. Longshoreman or Harbor Workers or Maritime Employment, if applicable. Self insurance plans approved by the Insurance Bureau of the State of Michigan are acceptable.

For Contracts in excess of One Million Dollars (\$1,000,000), the Contractor and each Subcontractor shall carry Umbrella or Excess Liability Insurance in the amount of Two Million Dollars (\$2,000,000). The Umbrella or Excess Liability policy wording shall be at least as broad as the primary or underlying policies and shall apply both to the Contractor's general

liability and to its automobile liability insurance, and shall be written on an Occurrence basis.

The Insurance shall be with companies licensed by the Insurance Bureau of the State of Michigan and rated in A.M. Best's Key Rating Guide (current edition) with an A- rating or higher, and in a form satisfactory to the Authority. Certificates of such insurance as well as the required endorsements will be attached to each copy of the executed Contract Documents. In lieu of required endorsements, if applicable, a copy of the policy sections where coverage is provided for additional insured and cancellation notice would be acceptable. Copies or certified copies of all policies mentioned above shall be furnished, if so requested.

All policies shall contain an endorsement stating that it is understood and agreed providing for furnishing the Authority at least Thirty (30) days, Ten (10) days for non-payment of premium, advance written notice of cancellation, non-renewal, reduction and/or Material Change of Insurance for any cause, and the Certificates attached to the executed Contract Documents shall bear evidence of such endorsement. This written notice shall be sent to: "Huron-Clinton Metropolitan Authority, Michael Brahm-Henkel, Manager of Assets and Development, 13000 High Ridge Drive, Brighton, MI 48114."

Commercial General Liability and Automobile Liability, as described above, shall include an endorsement stating the following shall be **Additional Insureds:** Huron-Clinton Metropolitan Authority, all elected and appointed officials, all employees and volunteers, all boards, commissions, and/or authorities and board members, including employees and volunteers thereof. It is understood and agreed by naming Huron-Clinton Metropolitan Authority as additional insured, coverage afforded is



considered to be primary and any other insurance Huron-Clinton Metropolitan Authority may have in effect shall be considered secondary and/or excess.

#### 11. INDEMNIFICATION

The Contractor shall defend, hold harmless, and indemnify the Authority, its officers, agents, employees, and directors against any and all loss, cost, claim, suit, demand or expense, including attorney fees and legal costs, attributable to personal injury, bodily injury, and/or property damage, and any other liability whatsoever arising, directly or indirectly, out of the performance of all work in connection with the Contract based upon any act or omission, negligent or otherwise, of the Contractor, its subcontractors, or any of the respective employees, agents or servants and representatives, any other person or persons directly or indirectly employed by them or anyone for whose acts they may be liable. It is specifically provided that the Contractor shall not be required to indemnify for claims caused by the sole negligence of the Authority.

#### 12. BUILDER'S RISK INSURANCE

The Contractor shall carry Builder's Risk Insurance on all Work in place and/or on materials stored at the construction site, including foundations and building equipment, to the full cost of replacement at the time of any loss under the Contract. This Builder's Risk Insurance shall provide insurance on an All Risk form, including but not limited to the perils of fire, wind, vandalism, collapse, theft, flood and earthquake. The Contractor may arrange for such deductibles as it deems to be within its ability to self-assume, but the Contractor shall be solely responsible for the amount of such deductibles and for any co-insurance penalties.

The Builder's Risk Insurance shall be for the benefit of the Contractor and the Authority as their respective interests may be at the time of loss, covering all insurable property affected by the work under the Contract whether in place, stored on the project site, stored off-site, or in transit at the risk of the insured. The Contractor and the Authority shall each be named in the policy or policies as a Named Insured. Builder's Risk Insurance need not be carried on excavation, piers, footings, or foundations until such time as work on the superstructure is started. It need not be carried on landscape work.

The Insurance policy or policies shall be effective in full until acceptance by the Authority of the entire completed Work.

#### 13. BIDDER'S RESPONSIBILITY FOR CONDITIONS OF WORK AND SITES

By submission of its Bid, the Bidder represents that it has examined the project site, that it has reasonably familiarized itself with the nature of the Work to be performed, and that it has determined to its own satisfaction the conditions to be encountered in the Work.

The Bidder acknowledges that it has not received or relied upon representations or warranties of any nature on the part of the Authority, its agents or employees, as to any conditions to be encountered in accomplishing the Work (specifically including subsoil conditions), and that its bid is based solely upon its own independent business judgment.

Data provided by the Authority resulting from subsurface investigations are for general informational purposes only, and are not to be

considered as representations or warranties on the part of the Authority. The Authority makes no claim that the data provided are accurate or sufficient, or that actual conditions which may be encountered will not differ from the conditions indicated by the data.

The Bidder to whom this Contract is awarded (the "Contractor") will not be entitled to any additional compensation by reason of conditions being different from those anticipated or by reason of failing to fully acquaint itself with the site, the conditions, and the work now in place which affect the Work of this Contract, except as provided below.

In accordance with Act No. 57 of Public Acts of 1998, as amended, the following provisions shall apply to any contract which exceeds \$75,000.00.

A. If the Contractor discovers one or both of the following physical conditions of the surface or subsurface at the project site, before disturbing the physical condition, the Contractor shall promptly notify the Authority of the physical condition in writing.

(1) A subsurface or a latent physical condition at the site is differing materially from those indicated in the Contract Documents.

(2) An unknown physical condition at the site is of an unusual nature differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the Contract Documents.

B. If the Authority receives a notice under subdivision A, the Authority shall promptly investigate the physical condition.

C. If the Authority determines that the physical conditions do materially differ and will cause an increase or decrease in costs or additional time

needed to perform the Contract, the Authority's determination shall be made in writing and an equitable adjustment shall be made and the Contract modified in writing accordingly.

D. The Contractor may not make a claim for additional costs or time because of a physical condition unless the Contractor has complied with the notice requirements of subdivision A. The Authority may extend the time required for notice under subdivision A.

E. The Contractor may not make a claim for an adjustment under the Contract after the Contractor has received the final payment under the Contract.

F. If the Contractor does not agree with the Authority's determination, with the Authority's consent the Contractor may complete performance of the Contract.

G. At the option of the Authority, the Contractor and the Authority shall arbitrate the Contractor's entitlement to recover the actual increase in contract time and costs incurred because of the physical condition of the project site. The arbitration shall be conducted in accordance with the rules of the American Arbitration Association and judgment rendered may be entered in any court having jurisdiction.

#### 14. FAIR EMPLOYMENT PRACTICES

The Contractor agrees that it will not discriminate against any employee or applicant for employment, to be employed in the performance of this Contract, with respect to his or her hire, tenure, terms, conditions or privileges of employment or any matter directly or indirectly related to employment (except when based on a bona fide occupational

qualification) because of race, color, religion, national origin, sex, age, height, weight, marital status, or handicap/disability.

The Contractor further agrees that it shall take affirmative action to insure the applicants are employed and the employees are treated during employment without regard to age, sex, race, creed, color, or national origin, height, weight, marital status or handicap/disability. Affirmative action shall mean: 1) The issuance of a statement of policy regarding equal employment opportunity and its communication to all personnel involved in recruitment, hiring, training, assignment and promotion; 2) Notification of all employment sources of company policy and active efforts to review the qualifications of all applicants regardless of race, color, religion, national origin, sex, age, height, weight, marital status, or handicap/disability; 3) Recruitment in the minority group community for employees; and 4) Establishing an integral system of reporting concerning equal employment, recruiting, hiring, upgrading and the like.

Breach of these covenants may be regarded as a material breach of the Contract.

The Contractor further agrees that it will require a similar covenant on the part of any subcontractor employed in the performance of this Contract.

## 15. TAXES

Purchases of materials by a Contractor in fulfillment of a contract of this nature are subject to the Michigan Sales Tax and such sales taxes shall be included in the Contract Price. Other taxes shall not be included in the Contract Price.

## 16. DRAWINGS AND SPECIFICATIONS

The Drawings and Specifications are intended to supplement each other, the two being considered cooperative and, therefore, it will not be the province of the Specifications to mention any portion of the construction which the Drawings are competent to explain, or vice versa, and such omissions shall not relieve the Contractor from carrying out such portions of the Work only indicated on the Drawings, and should items be required by the Specifications, although not shown on the Drawings, they are to be provided as though covered by both the Drawings and Specifications.

Any items necessary to the completion of the Work shown which may not actually be indicated on the Drawings or mentioned by the Specifications, but which are obviously necessary and usually employed in common practice, shall be supplied in place as part of this Contract.

Discrepancies between Drawings and Specifications, within the Specifications, or on the Drawings, shall be immediately referred to the Engineer who will interpret the true intent and meaning of same, and his decision shall be final.

Should the Contract Documents disagree, the better quality or larger quantity of materials or work shall be included in the Bid, and unless otherwise authorized in writing, shall be provided by the Contractor.

The intent of the Drawings and Specifications is to provide for the completion of the Work in every detail as shown thereon and as described therein. The Contractor shall provide all labor, materials, equipment, tools, plant, transportation and necessary supplies, and shall perform all operations required to complete the Work in accordance with the Specifications, and to the lines, grades, sections and

details shown on the Drawings, or by authorization by the Engineer.

The Drawings consist of large scale Drawings and full size details, both engineering and architectural, and small scale Drawings, and shall take precedence over one another in the above order. Figures shall take precedence in all cases over the scale measurements on Drawings.

## 17. PAYMENTS TO CONTRACTOR

Previous to the first payment under the Contract, the Contractor shall submit to the Authority a schedule of prices covering the various divisions of the Work to be done under this Contract. The schedule of prices shall aggregate the total Contract Price and, when approved by the Authority, shall be used as a basis for determining amount of payments. The schedule of prices shall be on forms furnished by the Authority, entitled "Contractor's Breakdown".

Payments will be made on the basis of the actual Work completed under the Contract as approved by the Authority's Engineer. Payments will be made in accordance with Act No. 524, Michigan Public Acts 1980 (Public Agency Construction Contracts Act).

For a Contract having a dollar value of less than Thirty Thousand Dollars (\$30,000.00) or a Contract with 3 or fewer payments, progress payments to the Contractor will be made monthly on the basis of a duly certified and approved estimate of the Work performed less ten percent (10%) which will be retained by the Authority until final completion and acceptance of the entire Work under the Contract.

For a Contract having a dollar value of Thirty Thousand Dollars (\$30,000.00) or more or a Contract with more than 3 payments, progress payments to

the Contractor will be made monthly on the basis of a duly certified and approved estimate of the Work performed less a retainage. The retained funds will be deposited in an interest bearing account in accordance with the provisions of Act 524, Michigan Public Acts 1980. Retainage and interest earned on retainage will be released to the Contractor together with the final progress payment except as provided in Section 4 (7) and (8) of Act 524, Michigan Public Acts 1980. At any time after ninety four percent (94%) of the Work under the contract is in place, the Authority will release the retainage plus interest upon request of the original Contractor in accordance with the provisions of Section 3 (5) of Act 524, Michigan Public Acts 1980. The retainage shall be determined as follows:

A. Ten percent (10%) of the dollar value of all Work in place until the entire Work under the Contract is fifty percent (50%) in place.

B. After the entire Work under the Contract is fifty percent (50%) in place, additional retainage will not be withheld unless the Authority determines that the Contractor is not making satisfactory progress, or for other specific cause relating to the Contractor's performance under the Contract. If the Authority so determines, the Authority may retain not more than ten percent (10%) of the dollar value of Work more than fifty percent (50%) in place.

Estimates will be prepared by the Engineer in 4 copies on the standard estimate form of the Authority.

The Authority reserves the right to require the Contractor to submit satisfactory evidence (in the form of partial waiver of lien or similar affidavit) that indebtedness to any or all subcontractors or suppliers arising under the Contract has been paid, as a condition precedent to making partial or periodic payments.

After completion of the Work and after the Engineer

has ascertained that each and every part of the Work has been performed in accordance with the Drawings, Specifications and approved Change Orders, the same will be accepted and the Engineer will make a final estimate as soon as practicable.

The Final Payment will not be made until the Contractor has filed with the Authority: (1) the written consent of the Surety to payment of the final estimate, and (2) satisfactory evidence by affidavit, in the form given hereinafter, that all indebtedness by reason of the Contract has been fully paid. In cases where the Authority has notice (whether or not complying with the requirements of applicable statutes) of unpaid claims of subcontractors, laborers, and suppliers, the Authority reserves the right in its discretion to require, in addition to the written consent of the Surety and the aforesaid affidavit, evidence satisfactory to it of the payment of such claims by the Contractor as a condition precedent to final payment. In case such evidence is not furnished by the Contractor, the Authority may in its discretion (1) withhold the entire amount of the final payment until such evidence is furnished by the Contractor, or (2) pay to the Contractor the amount of the final payment less the amounts as to which the Authority has notice of claims by subcontractors, laborers or suppliers, and withhold payment of such amounts until such evidence of payment is furnished by the Contractor.

The acceptance by the Contractor of the final payment shall constitute the Contractor's acceptance and approval of payment estimates, accounting, additions and deductions. Acceptance of final payment further constitutes the Contractor's acceptance and approval of full payment by the Authority for all work, labor, materials, supplies and services provided hereunder, and of the satisfaction, release and/or waiver of all claims or demands of or on behalf of the Contractor against the Authority arising from this Contract and the performance

thereof.

(SAMPLE FORM)

**CONTRACTOR'S AFFIDAVIT and RELEASE OF ALL CLAIMS**

*The undersigned, \_\_\_\_\_, hereby represents that on \_\_\_\_\_ it was awarded a Contract by the HURON-CLINTON METROPOLITAN AUTHORITY to \_\_\_\_\_ in accordance with the terms and conditions of Contract No. \_\_\_\_\_; and the undersigned further represents that the subject Work has now been accomplished and the said Contract has now been completed, in accordance with its terms.*

*The undersigned hereby warrants and certifies that all of its indebtedness arising by reason of the said Contract has been fully paid; and that all claims from subcontractors and others for labor and material used in accomplishing the said Project, as well as all other claims arising from the performance of the said Contract, have been fully paid. The undersigned further agrees that, if any such claim should hereafter arise, it shall assume responsibility for the same immediately upon request to do so by the Huron-Clinton Metropolitan Authority.*

*The undersigned, for a valuable consideration, the receipt of which is hereby acknowledged, does further hereby waive, release and relinquish any and all claims or right of lien which the undersigned now has or may hereafter acquire against the Huron-Clinton Metropolitan Authority or upon the subject premises for labor and material used in accomplishing said Project, or for any other matter or thing arising out of or connected with the Work on said Project.*

*This affidavit is freely and voluntarily given with full knowledge of the facts, on this \_\_\_\_ day of \_\_\_\_\_.*

\_\_\_\_\_  
*Contractor*  
By \_\_\_\_\_  
Title \_\_\_\_\_

*Subscribed and sworn to before me, a Notary Public  
in and for \_\_\_\_\_ County,  
Michigan, on this \_\_\_\_\_ day of \_\_\_\_\_.*

\_\_\_\_\_  
*Notary Public, \_\_\_\_\_ County, Michigan  
My Commission expires \_\_\_\_\_*

NOTE: The above italicized Contractor's Affidavit is a sample. The Contractor's Affidavit is to be submitted by the Contractor prior to final payment and shall be prepared on the printed form furnished by the Authority.

#### 18. DISPUTE RESOLUTION

If a dispute occurs regarding delay at any time during the term of the Contract or unacceptable delay at any time after ninety four percent (94%) of the Work under the Contract is in place, the parties to the Contract agree to submit those matters to the decision of an agent at the option of the Authority. Resolution of disputes pertaining to retainage will be in accordance with Section 4, Act No. 524, Michigan Public Acts 1980 (Public Agency Construction Contracts Act).

#### 19. CONTRACTOR'S DECLARATION

In accompaniment with each periodic progress payment, the Contractor shall make a declaration in writing for any claim of compensation or extension of time, for any losses, damages or delays sustained by reason of the acts of the Authority or its agents, or by any other causes occurring during the period covered

by the progress payment. The Contractor shall submit said declaration on the form given below, with an itemized statement of the details and amount of such loss, damages, or delays, and unless said declaration shall be made as thus required, the Contractor's claim for compensation or extension of time shall be forfeited and invalidated and it shall not be entitled to payment or extension of time on account of any such loss, damages or delays.

#### (SAMPLE FORM) CONTRACTOR'S DECLARATION

*I hereby declare that I have not, during the period \_\_\_\_\_ to \_\_\_\_\_, performed any Work, furnished any material, sustained any loss, damage or delay, or otherwise done anything for which I shall ask, demand, sue for, or claim compensation from the Huron-Clinton Metropolitan Authority in addition to the regular items set forth in the Contract numbered \_\_\_\_\_ and dated \_\_\_\_\_, for*

*executed between myself and the HURON-CLINTON METROPOLITAN AUTHORITY, and in the Change Orders for Work issued by the Authority in writing as provided thereunder, except as I hereby make claim for additional compensation and/or extension of time, as set forth on the itemized statement attached hereto.*

*There (is) (is not) an itemized statement attached.*

*Date: \_\_\_\_\_ Contractor \_\_\_\_\_*

*By: \_\_\_\_\_*

*Title: \_\_\_\_\_*

NOTE: The above italicized Contractor's Declaration is a sample. Contractor's Declaration shall be prepared on printed forms furnished by the Authority.

#### 20. LIQUIDATED DAMAGES

In the event that the Work is not totally completed and performed by the Completion Date, the Contractor shall pay the Authority Liquidated Damages in the amount specified per calendar day for each and every calendar day that Work under this Contract is uncompleted and unperformed beyond the said Completion Date.

The Work will have been deemed totally completed and performed when the Authority has been so advised by the Engineer that all the Work under the Contract has been completed. Minor correction or changes, which must be made in order to make the Work fully conform to the Drawings and Specifications and which will not interfere with the use of the facility by the Authority, may be made after the Completion Date specified without payment of the Liquidated Damages.

Payment to the Authority of Liquidated Damages due will be made by a deduction of this amount from the final payment due the Contractor. In the event that the amount due as Liquidated Damages is greater than the amount remaining to be paid on the Contract amount, the Contractor shall pay the Authority the difference in cash or bank draft or certified check.

## 21. EXTENSION OF TIME

If, during the time of construction, certain circumstances occur over which the Contractor has no control, such as labor strikes, or other events, which will prevent the Contractor, in its opinion, from completing the Work by the Completion Date specified, it may make a request in writing to the Engineer for an extension of time. It should set forth fully therein reasons which it believes would justify its request being granted.

If, in the opinion of the Engineer, the request is justified, a Contract Change Order will be issued extending the time to a new completion date. No extension of time will be granted unless covered by such a Change Order.

At the time of submitting a change authorization for extra work or change in plans, a statement must be included on the request indicating extra time required to complete the extra work or change in plans. Lack of such statement will mean that extra time will not be required to complete the Contract.

## 22. CHANGES IN WORK

The Authority reserves, and shall have the right under the Contract to make such changes in the Drawings and Specifications, in the character of the Work, and in the extent of the project as may be necessary or desirable to insure the completion of the Work in the manner most satisfactory to the Authority.

All increases or decreases in quantities, or in items of work, shall be covered by duly signed Contract Change Orders. Additional work, not covered by unit bid prices, shall be paid for either as an agreed Lump Sum or by agreed unit prices prior to the accomplishment of said work. In case of emergency, endangering life, or other part of the Work, the additional work may be done on a cost of labor and material basis, plus twenty percent (20%) to cover superintendence and profit.

Immediately following such emergency, a Change Order, covering all items of labor and material involved, shall be prepared and signed. In determining costs under the above formula, bond, compensation and unemployment insurance and

Social Security are hereby recognized as legitimate costs, but they are not subject to the override percentage

### 23. SUPERVISION

The Contractor shall keep on the Work a competent superintendent and necessary assistants. The superintendent shall represent the Contractor during his absence and all directions shall be as if given to the Contractor. Important directions, and others if so requested, shall be confirmed in writing.

### 24. SAFETY PROGRAM

The Contractor will (1) implement for the Work a comprehensive, meaningful and effective safety program designed to encourage safe work habits and practices and reduce the occurrences of accidents and injuries, and (2) require all subcontractors and suppliers on the Work to adhere to the Contractor's safety program. The Contractor will continuously audit the effective implementation of all safety programs and policies applicable to those activities occurring on the Work. The safety program shall meet all applicable federal, state, and local laws, ordinances, codes, rules and regulations.

### 25. ASSIGNMENT

The Contractor shall not assign this Contract or sublet it as a whole or in part, nor shall it assign any monies due or to become due to him hereunder, without prior written consent of the Authority.

### 26. INDEPENDENT CONTRACTOR

In the performance of its duties, the Contractor shall at all times act in the capacity of an independent contractor and not as agent of the Authority.

### 27. PERMITS; STATUTORY AND CODE COMPLIANCE

The Contractor shall obtain all necessary permits and approvals, and shall pay all necessary permit and inspection fees, except as otherwise indicated herein. Work shall be performed in accordance with applicable federal, state and local laws, regulations, codes, standards, approved permits, and with all the applicable requirements of the Occupational Safety and Health Act of 1970 as amended (OSHA). Any term, condition, or provision required by law to be contained in this Agreement shall be deemed to be included in this Agreement as if fully set forth herein and this Agreement shall be read and enforced as though such term, condition, or provision were so included. Items which are incidental and related to the Work, which are not specifically identified in the Contract Documents, but are required by the authorities having jurisdiction and normally included in work of a similar nature, shall be provided by the Contractor at no additional cost to the Authority.

By submission of its Bid, the Bidder represents that it is fully aware of the requirements of all authorities having jurisdiction, as related to this Work, and that the costs for conforming to such requirements are included in its Bid.

The Contractor shall perform the Work in accordance with the requirements of Act 451, Michigan Public Acts 1994 (Natural Resources and Environmental Protection Act), and in accordance with the approved permits of the Corps of Engineers (CoE) and the



Michigan Department of Environmental Quality (DEQ), as applicable. The Authority will obtain Soil Erosion and CoE/DEQ permits where required by these authorities, and the Contractor shall comply with the requirements of said permits.

Work required by the Drawings and Specifications exceeding the standards contained in the above mentioned laws and regulations shall be provided as shown or specified.

If the Drawings or Specifications are at variance with the above mentioned laws and regulations, the Contractor shall promptly notify the Authority in writing, and any necessary changes will be made as provided in the Contract.

## 28. CONTROL

The Engineer shall decide all questions which may arise as to the quality and acceptability of materials furnished and Work performed and as to the manner of performance and rate of progress of the Work, all questions which may arise as to the interpretation of the Drawings and Specifications, and all questions as to the satisfactory and acceptable fulfillment of the terms of the Contract.

The general location, alignment, elevation and grade of Work will be determined by the Engineer, who will be responsible for all staking necessary to properly mark these elements. The Contractor shall assume full responsibility for detail dimensions and elevations measured from the lines, grades and elevations so established. The Contractor shall preserve all construction stakes for the Engineer's use. If construction stakes are lost or removed by the Contractor's operations prior to inspection by the Engineer, the Contractor shall reset those stakes necessary for the Engineer's inspection. The

Contractor shall notify the Engineer 5 days before construction stakes are to be placed and elevations determined and/or before commencing any work.

The Contractor shall exercise proper precaution to verify the figures shown on the Drawings before laying out the Work, and will be held responsible for any errors resulting from its failure to exercise such precaution. The Contractor shall not take advantage of any obvious errors or omissions on the Drawings and shall request clarification of any questions that arise prior to staking.

## 29. QUALITY OF WORK AND MATERIALS

The Contractor shall be responsible for the proper construction of the Work, and the Work of its subcontractors and suppliers. Quality of workmanship shall be in accordance with the Contract Documents, and with the best prevailing and accepted standards in the industry. Unacceptable work shall be removed and replaced by the Contractor at no additional cost to the Authority, as directed by the Engineer.

Within the limits of the Drawings and Specifications, all work shall be of the highest available grade in all respects. It shall be delivered to the Authority at completion in perfect and undamaged condition.

The Contractor shall provide products manufactured in the United States only, unless those products are demonstrably not available within the constraints of the Specifications.

Where the Drawings or Specifications require a particular make, product, type, standard or grade of an item, the Bid shall be based thereupon and, unless substitutions are approved by the Authority by Addendum during the bidding period, or unless

otherwise provided herein, the Contract will be so awarded. The Authority nonetheless reserves the right to approve substitutions of such items after execution of Contract Documents, when in the interest of the Authority.

Where the Drawings or Specifications allow substitution of one of several specific makes, products, types, standards or grades of a particular item, or where such terms as "approved" or "or equal" are appended to the item name, the Contractor shall request and obtain the written approval of the Engineer for such substitutions, prior to incorporation of the item into the Work. The Engineer's decision permitting or rejecting such substitutions shall be final and conclusive.

Testing of all materials or other items provided by the Contractor shall be provided by the Contractor by a testing agency approved by the Authority, unless otherwise stated herein. Materials not in conformance with specifications will not be acceptable, and shall be removed and replaced with acceptable materials at no additional cost to the Authority.

### 30. DELIVERY, STORAGE AND HANDLING OF MATERIAL

The Contractor shall be responsible for transportation, receipt, handling and off-loading, storage, and proper care and protection of materials. Contractor materials, supplies and equipment may be stored on or near the Work site, subject to approval by the Authority. Packaged materials shall be delivered and stored in original packaging until ready for inclusion into the Work. Materials showing evidence of any damage will be rejected.

If it becomes necessary at any time during the

execution of the Work to move Contractor materials which have been temporarily stored or placed, the Contractor shall move them or cause them to be moved, as directed by the Engineer, without additional cost to the Authority.

The Contractor shall store its materials, supplies and equipment in such an orderly manner as will not unduly interfere with the performance of its work, or the work of other authorized personnel at or near the Work site.

### 31. SHOP DRAWINGS

No shop drawings shall be allowed on the Work unless the same are marked approved by the Engineer. Any materials ordered, worked on or included in the Work by the Contractor prior to approval of shop drawings shall be at the Contractor's risk.

The Contractor shall thoroughly check all shop drawings as regards to measurements, sizes of members, materials, and details to satisfy itself that they conform to the intent of the Authority's Drawings and Specifications. Shop drawings found to be inaccurate or otherwise in error shall be corrected prior to submittal to the Authority.

The checking and approving of shop drawings by the Engineer shall be construed as gratuitously assisting the Contractor, and the Engineer's action does not relieve the Contractor from responsibility for errors or omissions which may exist thereon. Where errors or omissions are discovered after approval of shop drawings, they must accordingly be made good by the Contractor irrespective of any approval by the Engineer.

Shop drawings not approved shall be corrected and

resubmitted in correct form for final approval.

The Contractor shall furnish 4 copies of shop drawings for approval by the Engineer. After shop drawings have been given final approval, the Authority will retain 2 copies and return 2 copies to the Contractor. If the Contractor wishes more than 2 copies returned, it shall send more than 4 copies.

### 32. PROTECTION

The Contractor shall be responsible for protecting the Work (including the materials, supplies and equipment of the Contractor, and those of its subcontractors and suppliers) from loss, theft, damage, vandalism, weathering, or inclusion of deleterious materials, during execution of the Work, and until final acceptance of the Work.

The Contractor shall provide and maintain all protections as required by the Authority, and as required by the laws, rules, regulations, codes and ordinances of the authorities having jurisdiction. All such protections shall be removed when directed by the Engineer.

The Contractor shall take every precaution against injuries to persons or damage to property. It shall place upon the Work or any part thereof only such loads as are consistent with the safety of that portion of the Work. The Contractor shall be responsible for any loss or damage caused by it or its employees to property of the Authority, or to work or materials of others, and shall make good any loss, damage or injury without additional cost to the Authority.

In general, all park facilities will remain open to the public at all times during park hours. Traffic shall be maintained at all times unless otherwise authorized by the Engineer. The Contractor shall provide and

maintain adequate lighting at hazardous areas and it shall keep all roadways and sidewalks in proper conditions. When the whole or a portion of the Work is suspended for any reason, or closed down in the evening or for weekends, the Contractor shall provide such barricades, cordons, coverings and markers at the Work area as necessary, or as directed by the Engineer, to insure the safety of the public.

The Contractor shall take ample precautions acceptable to the Engineer for the protection of trees and shrubbery which are on the site of the Work and are not to be removed. The Engineer will authorize the removal or destruction of trees and shrubbery necessary to be removed. Normally the Contractor will be authorized to remove trees and shrubbery to enable him to properly carry out the construction. Occasionally it will be required to work around trees adjacent to the lines of work in order to prevent a clear-cut appearance through wooded areas of the park. The Contractor shall instruct its personnel regarding the necessity for the preservation of trees and shrubs and shall take whatever additional measures are necessary to insure their protection from unnecessary disturbance.

Existing ground surfaces and ground covers damaged by Contractor operations shall be returned to their original condition, as directed by the Engineer.

The Contractor shall provide and maintain weather-protection and heating as required, or as directed by the Engineer, to properly protect all parts of the Work from damage during construction. This shall include protective coverings and enclosures, portable heaters, fuel and necessary attendance, as applicable. Heat shall be maintained for full days of 24 hours each for a period or periods as may be required or as directed by the Authority.

### 33. DELAY

The Contractor agrees that it shall have no claim against the Authority for additional compensation for any loss, damage or expense resulting from delays regardless of the cause of delay or whether the delay is the basis for an extension of time. The Contractor shall have no claim for loss, damage or expense resulting from reasonable interruptions to, or necessary suspension of, its work to enable other contractors or Authority personnel to perform their work.

### 34. ROYALTIES AND PATENTS

The Contractor shall pay for all royalties and patents and shall defend all suits or claims for infringement on any patent right on any material or process and shall save the Authority harmless on account thereof.

### 35. COORDINATION OF WORK

The Contractor shall coordinate its work with all others working in the area, the Engineer and the Authority's personnel as required for orderly and complete fulfillment of the entire project. The performance of the Contractor shall not jeopardize or delay the performance of others working in the area.

### 36. RUBBISH REMOVAL

During the process of carrying out the Work, the Contractor shall frequently clean up all refuse, rubbish, scrap materials, and debris caused by its operations, to the end that at all times the site of the Work shall present a neat, orderly and workmanlike appearance.

Upon completion of the project and before final payment, the Contractor shall remove from the premises all surplus material, falsework, temporary structures, including foundations thereof, plant of any description, and rubbish and debris of every nature resulting from its operations, and to return the site to a neat, orderly condition.

All areas disturbed by the Contractor in its operation, including haul routes, shall be cleaned of all spillage and debris. Rutted areas shall be graded to a smooth surface corresponding to the surrounding ground.

### 37. GENERAL WARRANTY

Neither the final certificate of payment nor any provision in the Contract Documents, nor partial or entire occupancy of the premises by the Authority, shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship.

As a condition precedent to final payment, the Contractor shall execute a General Warranty covering the Work under this Contract, on a standard form provided by the Authority, as follows. This warranty shall survive final payment, completion of the Work, and termination of the Contract.

#### (SAMPLE FORM) GENERAL WARRANTY

*The Undersigned, \_\_\_\_\_,  
referred to as the Contractor, hereby warrants to the  
Huron-Clinton Metropolitan Authority that the Work  
performed under Contract No. \_\_\_\_\_ for  
\_\_\_\_\_ (Project Title) conforms*

*to the requirements of the Contract; and is free of any defect in workmanship, materials or equipment provided by the Contractor, or any subcontractor or supplier; and shall remain in serviceable and perfect condition (ordinary wear, abuse and other causes beyond the control of the Contractor excepted), for a period of one year after the date of final completion and acceptance of the Work.*

*If, within one year (or such term as is required by a Maintenance Bond) after the date of final completion and acceptance of the Work, any workmanship, materials or equipment is found to be defective or otherwise not in conformance with the requirements of the Contract Documents, the Contractor shall correct it promptly and at his its own expense, after notification by the Authority. Damage to the Work, or to other property, caused by defective Work of the Contractor, shall additionally be corrected promptly by the Contractor at his its expense, after notification by the Authority. The Authority will give such notice with reasonable promptness. Work repaired or replaced by the Contractor after the date of final completion and acceptance, shall additionally be warranted for a period of one year after the date of repair.*

*If the Contractor fails to correct any defect within a reasonable time after notification, the Authority may correct the defect at the Contractor's expense.*

*This Warranty is in addition to other warranties, express or implied, as may be contained in the Contract. This Warranty does not establish a period of limitation with respect to other obligations of the Contractor or rights of the Authority contained in the Contract, but relates only to the specific obligation of the Contractor to correct the Work.*

\_\_\_\_\_  
Contractor  
By \_\_\_\_\_

Title \_\_\_\_\_  
Subscribed and sworn to before me, a Notary Public  
in and for \_\_\_\_\_ County,  
Michigan, on this \_\_\_\_\_ day of \_\_\_\_\_.  
\_\_\_\_\_  
Notary Public, \_\_\_\_\_ County, Michigan  
My Commission expires \_\_\_\_\_

NOTE: The above italicized General Warranty is a sample. General Warranty shall be prepared on the printed form furnished by the Authority.

### 38. DEFAULT

If the Contractor:

- A. Fails to prosecute the Work with equipment, materials or properly skilled workers sufficient to complete the Work in accordance with the Progress Schedule, including authorized time extensions;
- B. Discontinues performance of the Work, while failing to provide reasonable assurance that performance will be continued in conformance with the Progress Schedule;
- C. Persistently fails to obey the laws and regulations of public authorities having jurisdiction;
- D. Fails to make payments to subcontractors or suppliers in accordance with their respective agreements with the Contractor;
- E. Fails to remedy defective or rejected work;
- F. Or otherwise demonstrates a substantial failure to perform the Work properly and in accordance with the Contract Documents;

Then the Authority may provide written notice of default to the Contractor and Surety, specifying action

to be taken by them. If, within 10 days after such notice, the Contractor or Surety fails to proceed with actions accordingly, the Authority may take any or all of the following actions:

1. Prohibit access to the Work by the Contractor;
2. Take possession of the Work, and of all Contractor plant, materials and equipment on the Work site necessary for completing the Work;
3. Complete the Work in any manner deemed appropriate by the Authority: in which case the costs of completing the Work will be deducted from the unpaid balance of the Contract Amount, and the costs of completing the Work (including damages and additional costs) exceeding the Contract Amount shall be paid to the Authority by the Contractor or Surety;
4. Terminate the Contract, in which case (a) all obligations of the Contractor and Surety arising from Work performed under this Contract to the date of termination, and (b) the obligation of the Contractor and Surety to pay the Authority's costs of completing the Work, shall survive Contract termination; and the Contractor shall be entitled only to pro rata compensation for that portion of the Contract already performed, subject to obligations as described above, and less progress payments already made.

#### 39. TERMINATION WITHOUT CAUSE

The Authority retains the right to terminate this Contract without cause by written notice to the Contractor. Such termination shall be effective in the manner specified in the notice and shall be without prejudice to any claims which the Authority may have against the Contractor. On receipt of such notice, the Contractor shall, unless the notice directs otherwise:

A. Immediately discontinue the Work and the placing of orders for materials, supplies and equipment in connection with the performance of this Contract;

B. Make every reasonable effort, if requested, to procure cancellation of any existing orders or contracts upon terms satisfactory to the Authority;

C. Thereafter do only such Work as may be necessary to preserve and protect Work already in progress, and to protect material, plant, supplies and equipment on the Work site or in transit.

Upon such termination it is agreed:

1. That the obligations assumed by the Contractor prior to the date of termination shall be the sole responsibility of the Contractor;
2. That the Contractor shall be entitled only to pro rata compensation, subject to obligations of the Contractor arising from Work performed under this Contract and less progress payments already made, for the portion of the Contract already performed, including material for which it has made firm contracts, it being understood that the Authority shall be entitled to that material;
3. That the Contractor shall not be entitled to recover reimbursement for lost home-office overhead and profit in respect to Work not performed.

#### 40. DEFINITIONS

The following terms as used in these Contract Documents are respectively defined as follows:

A. "Authority" or "Owner" - The Huron-Clinton Metropolitan Authority as established by the State of

Michigan, Public Acts of 1939, No. 147

B. "Authority's Representative" - The Director of the Huron-Clinton Metropolitan Authority, or authorized representative.

C. "Engineer" - A registered engineer designated by the Director of the Huron-Clinton Metropolitan Authority, who is an employee of the Authority, unless otherwise designated by the Director.

D. "Contractor" - The individual, partnership or corporation undertaking the execution of the Work under the terms of the Contract and acting directly, or through agents or employees.

E. "Work" - The construction, improvements or services required by the Contract Documents, whether completed or partially completed, and includes all plant, labor, material, supplies, and equipment provided or to be provided by the Contractor to fulfill the Contractor's obligations.





CONTRACT FORM

CONTRACT NO. 509-16-532

Stony Creek Landing

Stony Creek Metropark

Macomb County, Michigan

Huron-Clinton Metropolitan Authority

CONTRACT FORM



CONTRACT NO. 509-16-532

Stony Creek Landing

Stony Creek Metropark

Macomb County, Michigan

Huron-Clinton Metropolitan Authority

THIS AGREEMENT, made at Brighton, Michigan, on \_\_\_\_\_, by and between the HURON-CLINTON METROPOLITAN AUTHORITY, a body corporate of the State of Michigan, herein referred to as the AUTHORITY, and \_\_\_\_\_ hereinafter referred to as the CONTRACTOR

WITNESSETH:

WHEREAS, the Contractor was the successful bidder of the letting held by the Authority on April 27, 2017, with reference to Project No. 509-16-532 entitled "Stony Creek Landing, Stony Creek Metropark, Macomb County, Michigan",

IT IS HEREBY AGREED AS FOLLOWS:

ARTICLE I - SCOPE OF WORK: The Contractor agrees: Construct Stony Creek Landing to include Demolition of Bituminous Parking Lot and Bike Path, Construction of Concrete Walks and Footings, Bituminous Paving of Parking Area and Relocated Bike Path, Construction of Stony Landing Building, Open-Canopy Shelter and Viewing Platform, Landscaping and related work and to provide all plant, labor, supplies, new and current materials, transportation, equipment, and incidental and related items necessary to complete this Work. The Contractor agrees to perform the entire Work in accordance with: the Drawings and Specifications entitled "Stony Creek Landing, Stony Creek Metropark, Macomb County, Michigan", HCMA Project No. 509-16-532, AEW Project No. 0215-0038; this Contract Form; and the Contract Documents, as more fully described below.

ARTICLE II - INCORPORATED DOCUMENTS: The Advertisement for Bids, Bid Form, General Conditions, Drawings, Specifications, and Addenda (if any), together with this Contract Form (collectively, the "Contract Documents"), form the entire Contract between the parties hereto, and all of said documents are incorporated in this Contract as if set forth at length herein.



CONTRACT FORM  
CONTRACT NO. 509-16-532

ARTICLE III - CONTRACT PRICE: This is a unit price Contract. The Authority will pay the Contractor for the performance of the Contract, subject to additions and deductions, as provided in the Contract Documents, in current funds as follows:

ITEMIZED UNITS

<u>ITEM OF WORK</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
1. Bonds, Insurance and Initial Set-up Expense, Max 3%	1	LS	\$ _____	\$ _____
2. Demo Existing Building	1	LS	_____	_____
3. Remove Culvert	105	LF	_____	_____
4. Remove Conc Curb and Gutter	3,118	LF	_____	_____
5. Remove Conc Pavement	4,144	SF	_____	_____
6. Remove Tree	18	EA	_____	_____
7. Remove Bituminous Pavement	25,976	SY	_____	_____
8. Remove and Salvage Flag Pole	1	EA	_____	_____
9. Remove Light Pole and Base	1	EA	_____	_____
10. Relocate Bench	6	EA	_____	_____
11. Relocate Sign	1	EA	_____	_____
12. Project Sign	1	EA	_____	_____
13. 4' Dia Sanitary Manhole	5	EA	_____	_____
14. 8" PVC Truss Pipe	1,193	LF	_____	_____
15. 6" Sanitary Lead	69	LF	_____	_____
16. 8" Gate Valve in Well	1	EA	_____	_____
17. 6" Std Hydrant Assembly	1	EA	_____	_____
18. Lower Exist. 8" Water Main	1	LS	_____	_____
19. 8" D.I. Water Main	731	LF	_____	_____
20. 6" D.I. Water Main	77	LF	_____	_____
21. 2" Copper Water Service	77	LF	_____	_____
22. Gas Service	1	LS	_____	_____
23. 4' Dia Catch Basin (Pavt.)	3	EA	_____	_____
24. 4' Dia Catch Basin (Field)	2	EA	_____	_____
25. Adjust Drainage Structure	9	EA	_____	_____
26. Adjust Hydrant and Stop Box	1	EA	_____	_____
27. Provide 1040 Frame and Cover	6	EA	_____	_____



CONTRACT FORM  
CONTRACT NO. 509-16-532

<u>ITEM OF WORK</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
28. Provide Type "N" Cover	2	EA		
29. CSP (16 GA)	10	LF		
30. 12" C-76, CL-IV	381	LF		
31. 8" Sch 40 PVC	72	LF		
32. 6" Sch 40 PVC	300	LF		
33. Cleanout with PVC cap	4	EA		
34. Cleanout with Bronze cap	3	EA		
35. Drainage Structure Tap	2	EA		
36. 6" Edge Drain	276	LF		
37. Sight Lighting	1	LS		
38. ADA Parking Sign	18	EA		
39. Striping	1	LS		
40. Earthwork	1	LS		
41. Subgrade Undercut	200	CY		
42. Concrete Curb and Gutter, Mountable	1,739	LF		
43. MDOT Detail "M" Curb	106	LF		
44. Curb Face Conc Walk, 7' Wide	510	SF		
45. 4" Conc Sidewalk	4,304	SF		
46. 8" Conc Pavement	620	SY		
47. Fire Lane Surface 4" Exposed Aggregate	820	SY		
48. Concrete	610	SF		
49. 6" Concrete Pav't with Thickened Edge	2,456	SF		
50. Concrete Spillway	1	EA		
51. 21AA Aggregate Base, 10" Thick	22,896	SY		
52. 21AA Limestone Shoulder	47	SY		
53. 21" Aggregate Base, 6" Thick	3,411	SY		
54. 3" Dia. Cobblestone, 4" Thick	150	SF		
55. Bituminous Leveling Course, MDOT 3C (3" Thick)	3,624	TON		





CONTRACT FORM  
CONTRACT NO. 509-16-532

	<u>ITEM OF WORK</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
56.	Bituminous Wearing Course, MDOT 13A (2" Thick)	2,416	TON		
57.	Bituminous Leveling, 13A (2" Thick) Pathway	342	TON		
58.	Bituminous Wearing, 13A (1-1/2" Thick) Pathway	256	TON		
59.	Site Lighting	1	LS		
60.	4' High Decorative Aluminum Fence	266	LF		
61.	Tree Protection	18	EA		
62.	Silt Fence	2,650	LF		
63.	Sack Type Inlet Filer	4	EA		
64.	Silt Fence at Catch Basin	8	EA		
65.	Picnic Shelter and Footings	1	LS		
66.	Red Sunset Maple	4	EA		
67.	Norway Spruce	11	EA		
68.	Weigela	10	LS		
69.	Potentilla	31	EA		
70.	Burning Bush	3	EA		
71.	Cotoneaster	18	EA		
72.	Juniper	28	EA		
73.	Karl Foerster	24	EA		
74.	Flag Pole and Footing	1	EA		
75.	Dumpster Enclosure	1	LS		
76.	Viewing Platform	1	LS		
77.	Viewing Platform Piles	325	LF		
78.	Bottle Filling Station	2	EA		
79.	Trash Bin	5	EA		
80.	Recycle Bin	5	EA		
81.	Bike Rack (RR5H-111)	2	EA		
82.	Bike Rack (RR3H-63)	1	EA		
83.	Bike Repair Station	1	EA		
84.	Park Bench	3	EA		
85.	ADA Accessible Binocular	1	EA		



CONTRACT FORM  
CONTRACT NO. 509-16-532

<u>ITEM OF WORK</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
86. Binocular	1	EA		
87. 12" Dia. Piers and Rope	128	LF		
88. Pier Clusters	5	EA		
89. Restoration	1	LS		
90. Building – Foundations and Flat Work	1	LS		
91. Building – Mechanical and Plumbing Trades	1	LS		
92. Building – Electrical Trades	1	LS		
93. Building – General Trades	1	LS		
94. Building – Kitchen Equipment	1	LS		
95. Building – Fire Protection	1	LS		
96. Building – Interior Decoration Allowance	1	LS	\$5,000.00	\$5,000.00
<u>Grant No. TF14-0127 Items:</u>				
97. Red Maple	2	EA		
98. ADA Grill	1	EA		
<b>Total Contract Amount</b>				<b>\$</b>



CONTRACT FORM  
CONTRACT NO. 509-16-532

ARTICLE IV - LIQUIDATED DAMAGES: The undersigned agrees that time is an essential condition of the Contract and shall totally complete the work on or before May 4, 2018. Should the undersigned fail to complete the work by this date, it is agreed that the sum of One Thousand Five Hundred and Fifty Dollars (\$1,550.00) per day will be deducted from the Contract Amount for each and every calendar day the work is incomplete.

ARTICLE V - MISCELLANEOUS: The Contractor acknowledges that he has not received or relied upon any representations or warranties of any nature whatsoever from the Authority, its agents or employees as to any conditions to be encountered in accomplishing the work (specifically including subsoil conditions), and that this Contract is entered into based solely upon the Contractor's own independent business judgment.

IN WITNESS WHEREOF the parties hereto have caused this instrument to be executed on the day and year first above written.

WITNESSES:

HURON-CLINTON METROPOLITAN  
AUTHORITY:

\_\_\_\_\_

BY: \_\_\_\_\_  
John C. Hertel, Chairman

\_\_\_\_\_

AND: \_\_\_\_\_  
Jaye Quadrozzi, Secretary

\_\_\_\_\_  
George Phifer, Director

WITNESSES:

CONTRACTOR:

\_\_\_\_\_

\_\_\_\_\_  
(Firm Name)

\_\_\_\_\_

AND: \_\_\_\_\_

TITLE: \_\_\_\_\_



HURON-CLINTON METROPOLITAN AUTHORITY

# PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS,

That we \_\_\_\_\_ (Contractor)  
hereinafter called the "Principal" and \_\_\_\_\_ a Corporation  
organized under the laws of the State of \_\_\_\_\_ and duly authorized to transact business in the State of  
Michigan, hereinafter called "Surety", are held and firmly bound unto the Huron-Clinton Metropolitan Authority, hereinafter called  
"Obligee", in the just and full sum of \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_) lawful money of the United States of America, to the payment whereof, well and truly to be  
made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such that,

WHEREAS, the above Principal has entered into a contract with said Obligee, numbered \_\_\_\_\_, and dated  
\_\_\_\_\_, 20\_\_\_\_, for \_\_\_\_\_  
\_\_\_\_\_, (Project Title), which contract, including the drawings and specifications thereof, is  
herein called the "Contract" and is made a part hereof as fully and to the same extent as if the same were entirely set forth herein; and

WHEREAS, it was one of the conditions of the award of the said Obligee, pursuant to which said Contract was entered into, that these  
presents should be executed; and

WHEREAS, this bond is given in compliance with and subject to the provisions of Act No. 213 of Michigan Public Acts of 1963, and  
any amendments thereto;

NOW, THEREFORE, if the above Principal shall in all respects faithfully perform said Contract in accordance with the drawings,  
specifications and terms thereof, and such alterations as may be made in such Contract is herein or therein provided for, then this  
obligation shall be void; otherwise the same shall be in full force and effect.

AND PROVIDED, that any alterations which may be made in the terms of said Contract, or in the work to be done thereunder, or the  
giving of any extension of time for the performance of said Contract, or any other forbearance on the part of either party to the other,  
shall not in any way release the Principal and the Surety or either of them, their heirs, executors, administrators, successors or assigns,  
from any liability hereunder, notice to the Surety of any alterations, extensions of time, or of any forbearance being hereby waived.

SIGNED and SEALED this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
In the Presence of:

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Principal

(Seal)

\_\_\_\_\_  
Witness

By: \_\_\_\_\_

\_\_\_\_\_  
Witness  
(Seal)

\_\_\_\_\_  
Surety

\_\_\_\_\_  
Witness

By: \_\_\_\_\_  
Attorney-in-fact

Bonds correct in form:

By: \_\_\_\_\_  
Attorney for HURON-CLINTON METROPOLITAN AUTHORITY





HURON-CLINTON METROPOLITAN AUTHORITY  
**LABOR AND MATERIAL BOND**

KNOW ALL MEN BY THESE PRESENTS,

That we \_\_\_\_\_ (Contractor)  
hereinafter called the "Principal" and \_\_\_\_\_ a Corporation  
organized under the laws of the State of \_\_\_\_\_ and duly authorized to transact business in the State of  
Michigan, hereinafter called "Surety", are held and firmly bound unto the Huron-Clinton Metropolitan Authority, hereinafter called  
"Obligee", in the just and full sum of \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_) lawful money of the United States of America, to the payment whereof, well and truly to be  
made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such that,

WHEREAS, the above Principal has entered into a contract with said Obligee, numbered \_\_\_\_\_, and dated  
\_\_\_\_\_, 20\_\_\_\_, for \_\_\_\_\_  
\_\_\_\_\_ (Project Title), which contract, including the drawings and specifications thereof, is  
herein called the "Contract" and is made a part hereof as fully and to the same extent as if the same were entirely set forth herein; and

WHEREAS, it was one of the conditions of the award of the said Obligee, pursuant to which said Contract was entered into, that these  
presents should be executed; and

WHEREAS, this bond is given in compliance with and subject to the provisions of Act No. 213 of Michigan Public Acts of 1963, and  
any amendments thereto;

NOW, THEREFORE, the condition of this obligation is such that if payment shall be made, as the same may become due and payable,  
of all indebtedness which may arise to any person, firm or corporation on account of the furnishing, to the Principal or to any  
subcontractor or supplier of the Principal, of labor or material, or both, used or reasonably required for use in the performance of said  
Contract, then this obligation shall be void; otherwise the same shall be in full force and effect.

AND PROVIDED, that any alterations which may be made in the terms of said Contract, or in the work to be done thereunder, or the  
giving of any extension of time for the performance of said Contract, or any other forbearance on the part of either party to the other,  
shall not in any way release the Principal and the Surety or either of them, their heirs, executors, administrators, successors or assigns,  
from any liability hereunder, notice to the Surety of any alterations, extensions of time, or of any forbearance being hereby waived.

SIGNED and SEALED this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
In the Presence of:

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Principal

(Seal)

\_\_\_\_\_  
Witness

By: \_\_\_\_\_

\_\_\_\_\_  
Witness  
(Seal)

\_\_\_\_\_  
Surety

\_\_\_\_\_  
Witness

By: \_\_\_\_\_  
Attorney-in-fact

Bonds correct in form:

By: \_\_\_\_\_  
Attorney for HURON-CLINTON METROPOLITAN AUTHORITY



HURON-CLINTON METROPOLITAN AUTHORITY

# MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS,

That we \_\_\_\_\_ (Contractor)  
hereinafter called the "Principal" and \_\_\_\_\_ a Corporation  
organized under the laws of the State of \_\_\_\_\_ and duly authorized to transact business in the State of  
Michigan, hereinafter called "Surety", are held and firmly bound unto the Huron-Clinton Metropolitan Authority, hereinafter called  
"Obligee", in the just and full sum of \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_) lawful money of the United States of America, to the payment whereof, well and truly to be  
made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such that,

WHEREAS, the above Principal has entered into a contract with said Obligee, numbered \_\_\_\_\_, and dated  
\_\_\_\_\_, 20\_\_\_\_, for \_\_\_\_\_  
\_\_\_\_\_, (Project Title), which contract, including the drawings and specifications thereof, is  
herein called the "Contract" and is made a part hereof as fully and to the same extent as if the same were entirely set forth herein; and

WHEREAS, it was one of the conditions of the award of the said Obligee, pursuant to which said Contract was entered into, that these  
presents should be executed; and

NOW, THEREFORE, if the above Principal shall indemnify the Obligee for all loss that the Obligee may sustain by reason of any  
defective materials or workmanship that shall appear within two years from and after the date of acceptance of the work by the said  
Obligee, then this obligation shall be void; otherwise the same shall be in full force and effect.

AND PROVIDED, that any alterations which may be made in the terms of said Contract, or in the work to be done thereunder, or the  
giving of any extension of time for the performance of said Contract, or any other forbearance on the part of either party to the other,  
shall not in any way release the Principal and the Surety or either of them, their heirs, executors, administrators, successors or assigns,  
from any liability hereunder, notice to the Surety of any alterations, extensions of time, or of any forbearance being hereby waived.

SIGNED and SEALED this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

In the Presence of:

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Principal

(Seal)

By: \_\_\_\_\_

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Surety

(Seal)

By: \_\_\_\_\_

\_\_\_\_\_  
Witness

Attorney-in-fact

Bonds correct in form:

By: \_\_\_\_\_  
Attorney for HURON-CLINTON METROPOLITAN AUTHORITY



SECTION 01027  
APPLICATION FOR PAYMENT

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.
  - 1. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule and List of Subcontractors

1.3 SCHEDULE OF VALUES

- A. Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
  - 1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
    - a. Contractor's construction schedule.
    - b. Application for Payment form.
    - c. List of subcontractors.
  - 2. Submit the Schedule of Values to the Engineer at the earliest feasible date prior to commencement of work.
- B. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.
  - 1. Identification: Include the following Project identification on the Schedule of Values:
    - a. Project name and location.
    - b. Name of the Owner.
    - c. Project Number.
    - d. Contractor's name, address and telephone number.
    - e. Date of submittal.
  - 2. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:
    - a. Generic name.

- b. Related Specification Section.
  - c. Name of subcontractor.
  - d. Name of manufacturer or fabricator.
  - e. Name of supplier.
  - f. Change Orders (numbers) that have affected value.
  - g. Dollar value.
  - h. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.
- 3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.
  - 4. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
  - 5. The Owner will make progress payments only for work furnished, installed and completed in place. Progress payments will not be made for materials or equipment purchased or fabricated but not installed.

#### 1.4 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Engineer and paid for by the Owner.
  - 1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
- B. Payment Application Times: Progress payments will be made on a monthly basis, at regular dates as mutually agreed upon.
- C. Payment Application Forms: Contractor may use any form for payment application it deems appropriate, for purposes of its internal controls and of accurately describing amounts proposed for payment to the Engineer.
- D. Application Preparation: The Application for Payment will be prepared by the Engineer, using the amounts and information provided by the Contractor as a basis for preparation. The form of the Application for Payment will be the Owner's Standard Pay Estimate Form, a copy of which is included at the end of this section.
  - 1. The Engineer and Contractor will mutually agree upon the amounts completed for each item of work, however the Engineer's determination of actual amounts completed shall be final. The Engineer will complete the Application for Payment in quadruplicate and will sign and transmit the application to the Contractor.
  - 2. Entries will match data on the Schedule of Values and Contractor's Construction Schedule.

- E. Certified Payroll: The Contractor shall submit certified payrolls with each pay request to demonstrate compliance with prevailing wage requirements.
- F. Transmittal and Execution:
1. The Engineer will transmit 4 copies of the Application for Payment to the Contractor.
  2. The Contractor will return to the Engineer four (4) executed copies of each Application for Payment, including waivers of lien, Contractor's Declaration and other attachments as necessary.
  3. Application for Payment will be submitted by the Engineer to the Director of the Authority for authorization. While actual time may vary, the Authority will endeavor to process payment within four weeks of return of Application for Payment by the Contractor to the Engineer.
- G. Waivers of Mechanics Lien: With each Application for Payment submit current waivers of mechanics liens from subcontractors or sub-subcontractors and suppliers for the construction period covered by the previous application.
1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.
  2. When an application shows completion of an item, submit final or full waivers.
  3. The Owner reserves the right to designate which entities involved in the Work must submit waivers.
  4. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to the Owner.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
1. List of subcontractors including e-mail addresses.
  2. List of principal suppliers and fabricators.
  3. Schedule of Values.
  4. Contractor's Construction Schedule (preliminary if not final).
  5. Schedule of principal products.
  6. Schedule of unit prices.
  7. Schedule of Submittals.
  8. List of Contractor's principal consultants, including Testing Agency.
  9. Copies of building permits.
  10. Copies of authorizations and licenses from governing authorities for performance of the Work.
  11. Initial progress report.
  12. Report of pre-construction meeting.
  13. Certificates of insurance and insurance policies.
  14. Performance, labor and material and maintenance bonds.

- I. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment. This application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Administrative actions and submittals that shall proceed or coincide with Application for Payment at substantial completion include:
  - 1. Occupancy permits and similar approvals.
  - 2. Warranties (guarantees) and maintenance agreements.
  - 3. Test/adjust/balance records.
  - 4. Maintenance instructions.
  - 5. Meter readings.
  - 6. Start-up performance reports.
  - 7. Change-over information related to Owner's occupancy, use, operation and maintenance.
  - 8. Final cleaning.
  - 9. Application for reduction of retainage, and consent of surety.
  - 10. Advice on shifting insurance coverages.
  - 11. Final progress photographs.
  - 12. List of incomplete Work, recognized as exceptions to Engineer's Certificate of Substantial Completion.
- K. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final Application for Payment include the following:
  - 1. Completion of Project Close-Out requirements.
  - 2. Completion of items specified for completion after Substantial Completion.
  - 3. Assurance that unsettled claims will be settled.
  - 4. Assurance that Work not complete and accepted will be completed without undue delay.
  - 5. Transmittal of required Project construction records to Owner.
  - 6. Proof that taxes, fees and similar obligations have been paid.
  - 7. Removal of temporary facilities and services.
  - 8. Removal of surplus materials, rubbish and similar elements.
  - 9. Change of door locks to Owner's access.
  - 10. State Boiler inspection and tag.
  - 11. Full unconditional waivers of lien from any subcontractors not previously submitted.
  - 12. Contractor's Declaration.
  - 13. General Warranty.

## PART 2 MATERIALS

## NOT USED

## PART 3 EXECUTION



NOT USED

END OF SECTION



SECTION 01030  
ALTERNATES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing Alternates.

1.3 DEFINITIONS

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

1.4 PROCEDURES

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

PART 3 EXECUTION

3.1 SCHEDULE OF ALTERNATES

**A. Alternate No. 1:**

1) Add \_\_\_\_\_.

2) Add \_\_\_\_\_.

3) Add \_\_\_\_\_.

The Base bid is to include but not limited to all \_\_\_\_\_. The base  
bid  
shall include \_\_\_\_\_.

**B. Alternate No. 2:**

Add \_\_\_\_\_.

The Base bid shall include \_\_\_\_\_.

**C. Alternate No. 3:**

Add \_\_\_\_\_ as specified in the Architectural drawings and  
specifications.

The Base bid shall include \_\_\_\_\_.

**D. Alternate No. 4:**

Add \_\_\_\_\_ as shown in the site drawings and  
specifications.

**E. Alternate No. 5:**

Add \_\_\_\_\_.

END OF SECTION 01030

SECTION 01035  
MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 Related document

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications or Change Orders.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 1 Section "Submittals" for requirements for the Contractor's Construction Schedule.
  - 2. Division 1 Section "Application for Payment" for administrative procedures governing applications for payment.

1.3 MINOR CHANGES IN THE WORK

- A. Supplemental instructions authorizing minor changes in the Work, not involving an adjustment to the Contract Sum or Contract Time, will be issued by the Engineer.

1.4 CHANGE ORDER PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time will be issued by the Architect or Engineer, with a detailed description of the proposed change and supplemental or revised Drawings and Specifications, if necessary.
  - 1. Proposal requests issued by the Architect or Engineer are for information only. Do not consider them instruction either to stop work in progress, or to execute the proposed change.
  - 2. Unless otherwise indicated in the proposal request, within seven (7) days of receipt of the proposal request, submit to the Engineer for the Owner's review and estimate of cost necessary to execute the proposed change.
    - a. Include a list of quantities of products to be purchased and unit costs, along with the total amount of purchases to be made. Provide copies of subcontractor and supplier quotations. Where requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

3. The percentages for overhead, profit and handling fee shall be negotiated and may vary according to nature, extent and complexity for work involved, but in no case shall rates exceed 10 percent over the actual cost of materials and 15 percent over the actual cost of labor necessitated for the change.
- B. Contractor-Initiated Change Order Proposal Requests: When latent or other unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change order to the Engineer.
1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
  2. Include a list of quantities of products to be purchased and unit costs along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
  3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
  4. Comply with requirements in Section "Product Substitutions" if the proposed change in the Work requires the substitution of one product or system for a product or system specified.
  5. The percentages for overhead, profit and handling fee shall be negotiated and may vary according to nature, extent and complexity for work involved, but in no case shall rates exceed 10 percent over the actual cost of materials and 15 percent over the actual cost of labor necessitated for the change.

## 1.5 CONSTRUCTION CHANGE DIRECTIVES

- A. Construction Change Directive: When the Owner and Contractor are not in total agreement on the terms of a Change Order Proposal Request, the Engineer may issue a Construction Change Directive instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
1. The Construction Change Directive will contain a complete description of the change in the Work and designate the method to be followed to determine change in the Contract Sum or Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

## 1.6 CHANGE ORDER PROCEDURES

- A. Upon the Owner's approval of a Change Order Proposal Request, the Architect or Engineer will issue a Change Order for signatures of the Owner and Contractor as provided in the Conditions of the Contract.

## 1.7 TIME OF COMPLETION

- A. If at any time during the life of this contract, the Contractor finds that it will be impossible for him to complete the work on or before the completion date fixed by the contract, he shall make written request to the Engineer for an extension of time for completion. He should set forth fully therein reasons which he believes would justify his request being granted. At the time of requesting a change authorization for extra work or change in plans, a statement must be included on the request indicating extra time required to complete the work or change in plans. Lack of such statement will mean that extra time will not be required to complete the contract.

## PART 2 MATERIALS

NOT USED

## PART 3 EXECUTION

NOT USED

END OF SECTION





SECTION 01200  
PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENT

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project meetings including, but not limited to:
  - 1. Pre-Construction Conference.
  - 2. Coordination Meetings.
  - 3. Progress Meetings.
- B. Construction schedules are specified in Division 1 Section "Submittals."

1.3 PRE-CONSTRUCTION CONFERENCE

- A. The owner will schedule a pre-construction conference and organizational meeting at the Project site or other convenient location at a mutually agreeable time and prior to commencement of construction activities. The purpose of the meeting is to review responsibilities and assignments.
- B. Attendees: The Owner/Engineer, Architect, the Contractor and its superintendent and subcontractors as the Contractor deems appropriate shall each be represented at the conference.
- C. Agenda: Items of significance to be discussed will include:
  - 1. Tentative construction schedule.
  - 2. Critical Work sequencing.
  - 3. Designation of responsible personnel.
  - 4. Procedures for processing field decisions and Change Orders.
  - 5. Procedures for processing Applications for Payment.
  - 6. Distribution of Contract Documents.
  - 7. Submittal of Shop Drawings, Product Data and Samples.
  - 8. Preparation of record documents.
  - 9. Use of the premises.
  - 10. Office, Work and storage areas.
  - 11. Equipment deliveries and priorities.
  - 12. Safety procedures.
  - 13. First aid.
  - 14. Security.
  - 15. Housekeeping.

16. Working hours.

1.4 COORDINATION MEETINGS

- A. Project coordination meetings will be scheduled as necessary at times convenient for all parties involved. Project coordination meetings are in addition to specific meetings held for other purposes, such as regular monthly progress meetings.
- B. Representation at each meeting will be required of every party currently involved in coordination or planning for the construction activities involved.
- C. The Engineer will record meeting results and distribute copies as necessary. Contractor shall notify subcontractors affected by decisions or actions resulting from each meeting.

1.5 PROGRESS MEETINGS

- A. Progress meetings at the Project site will be held on a monthly basis.
- B. Attendees: In addition to representatives of the Owner, Architect, Civil Consultant and their consultants and Contractor, each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with the Project and authorized to conclude matters relating to progress.
- C. Agenda: Review minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.
  - 1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
  - 2. Review the present and future needs of each entity present, including such items as:
    - a. Jobsite Safety.
    - b. Open Items from prior meetings.
    - c. Status of Submittals.
    - d. Requests for Interpretation.
    - e. Construction Schedule.
    - f. Sequences.
    - g. Deliveries.
    - h. Off-site fabrication status.
    - i. Coordination with Park Events.
    - j. Housekeeping.
    - k. Quality and Work standards.

- I. Temporary facilities and services.
  - m. Change Orders.
  - n. Documentation of information for payment requests.
- D. The Engineer will record meeting results and distribute copies to parties in attendance as necessary. The Engineer will distribute copies of meeting minutes via e-mail. Contractor shall notify subcontractors affected by decisions or actions resulting from each meeting.
  - 1. Schedule Updating: Contractor shall revise the construction schedule where revisions have been made or recognized as a result of the progress meeting.

PART 2 MATERIALS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION



SECTION 01300  
SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENT

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including:
  - 1. Contractor's construction schedule.
  - 2. Submittal Schedule.
  - 3. Daily construction reports.
  - 4. Shop Drawings.
  - 5. Product Data.
  - 6. Samples.
- B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
  - 1. Permits.
  - 2. Applications for payment.
  - 3. Performance and payment bonds.
  - 4. Insurance certificates.
  - 5. List of Subcontractors.
- C. The Schedule of Values submittal is included in Section "Applications for Payment".
- D. Inspection and test reports are included in Section "Quality Control Services".

1.3 GENERAL:

- A. The Contractor shall submit 6 copies each submittal for each material, piece of equipment, product or other item to be incorporated into the work, whether specifically called for or not. Submittals shall take the form of complete shop drawings, certifications, manufacturer's data, catalog cuts, color samples, and material samples or other form as specified herein.
- B. No submittals shall be allowed on the work unless the same are marked approved by the Architect or Civil Consultant.
- C. No material, product, equipment or other item may be incorporated into the work unless a submittal covering each item has been approved. Any material, product, piece of

equipment or other item incorporated into work without an approved submittal may be directed by the Engineer to be removed and replaced, along with associated work at no cost to the Owner.

#### 1.4 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
  - 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
    - a. The Owner reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
  - 3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.
    - a. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Owner will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
    - b. If an intermediate submittal is necessary, process the same as the initial submittal.
    - c. Allow two weeks for reprocessing each submittal.
    - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Owner sufficiently in advance of the Work to permit processing.
- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
  - 1. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
  - 2. Include the following information on the label for processing and recording action taken:
    - a. Project name.
    - b. Date.
    - c. Name and address of Owner.
    - d. Name and address of Contractor.
    - e. Name and address of subcontractor.

- f. Name and address of supplier.
  - g. Name of manufacturer.
  - h. Number and title of appropriate Specification Section.
  - i. Drawing number and detail references, as appropriate.
- C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.
  - 1. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

## 1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Submit the Contractor's Construction Schedule to the Engineer at the earliest feasible date prior to commencement of work.
- B. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. Submit at the pre-construction conference.
  - 1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values".
  - 2. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
  - 3. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Owner's procedures necessary for certification of Substantial Completion.
- C. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.
- D. Distribution: Following response to the initial submittal, print and distribute copies to the Owner, Architect, Civil Consultant, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
  - 1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

- E. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently at each progress meeting.

## 1.6 SUBMITTAL SCHEDULE

- A. Within 30 calendar days after Notice to Proceed, and before submittal of any Shop Drawings, Product Data, Samples, or other required submittals, submit a schedule identifying each document required by the Specifications to be submitted, and stating the Contractor's planned date of submittal for that document.
- B. Categorize submittal items by items by type, and designate the respective types by code. Type codes and their respective meanings are specified in the paragraph "Legend," following.
- C. The submittal schedule shall be essentially in the form exhibited in the paragraph, "Example Submittals Schedule," following, and shall list all Sections of the Specifications of Divisions 1 through 16, whether or not containing submittals requirements.
- D. The date of submittal should be at the latest date on which the item may be submitted and be expected to be received by the Contractor in return in time to meet the construction schedule.
- E. Legend

### Type

#### Code Explanation

SD	Shop Drawings: refer to section 1.7 for description.
PD	Product Data.
S	Sample.
DC	Design Calculations.
L	Letter.
SoC	Statement of Compliance.
Cer	Certificate/Certification.
Q	Qualifications Statement: such as for Contractor, fabricator or erector.
SC	Sample Construction.
InI	Installation Instructions.
AT	Acceptance Test
Opl	Operating Instructions.
Mal	Maintenance Instructions.
MA	Maintenance Agreement.
MaM	Maintenance Materials.
Rcp	Receipt(s): such as for keys, tools and other detachable parts, and including delivery tickets.
RD	Record Documents.
SW	Special Warranty.



F. Example Submittals Schedule

<u>Sect. No.</u>	<u>Para. No.</u>	<u>Type Code</u>	<u>Description</u>	<u>Subm. Date</u>	<u>Action</u>
------------------	------------------	------------------	--------------------	-------------------	---------------

1.7 SHOP DRAWINGS

- A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
- B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
  - 1. Dimensions.
  - 2. Identification of products and materials included.
  - 3. Compliance with specified standards.
  - 4. Notation of coordination requirements.
  - 5. Notation of dimensions established by field measurement.
  - 6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2" x 11", but no larger than 36" x 48".
  - 7. Submittal: Submit 6 blue- or black-line prints; 3 prints will be retained; and the remainder will be returned.
    - a. One of the prints returned shall be marked-up and maintained as a "Record Document".
  - 8. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.
- C. Coordination drawings are a special type of Shop Drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.
  - 1. Coordination Drawings may include components previously shown in detail on Shop Drawings or Product Data.
  - 2. Submit coordination drawings for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

1.8 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation

instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings".

1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
  - a. Manufacturer's printed recommendations.
  - b. Compliance with recognized trade association standards.
  - c. Compliance with recognized testing agency standards.
  - d. Application of testing agency labels and seals.
  - e. Notation of dimensions verified by field measurement.
  - f. Notation of coordination requirements.
2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
3. Submittals: Submit 6 copies of each required submittal. The Architect will retain 3, and will return the remaining 3 marked with action taken and corrections or modifications required.
  - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
4. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and other required for performance of construction activities. Show distribution on transmittal forms.
  - a. Do not proceed with installation until an applicable copy of Product Data applicable is in the installer's possession.
  - b. Do not permit use of unmarked copies of Product Data in connection with construction.

## 1.9 SAMPLES

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.
  1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Architect's Sample. Include the following:
    - a. Generic description of the Sample.
    - b. Sample source.
    - c. Product name or name of manufacturer.

- d. Compliance with recognized standards.
  - e. Availability and delivery time.
2. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
- a. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.
  - b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
3. Preliminary Submittals: Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.
- a. Preliminary submittals will be reviewed and returned with the Architect's mark indicating selection and other action.
4. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; two will be returned marked with the action taken.
5. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.
- a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
  - b. Sample sets may be used to obtain final acceptance of the construction associated with each set.
6. Field Samples specified in individual Sections are special types of Samples. Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.
- a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

#### 1.10 ACTION BY ARCHITECT OR CIVIL CONSULTANT

- A. The checking of submittals by the Owner, Architect, Civil Consultant or their consultants shall be construed as gratuitously assisting the Contractor, and the actions resulting from their review does not relieve the Contractor from responsibility for errors or omissions which may exist thereon.

- B. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, marked to indicate action taken, and return promptly.
  - 1. Compliance with specified characteristics is the Contractor's responsibility.
- C. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:
  - 1. Final Unrestricted Release: Where submittals are marked "No Exceptions Taken", that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
  - 2. Final-But-Restricted Release: When submittals are marked "Note Markings", that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
  - 3. Returned for Resubmittal: When submittal is marked "Rejected", or "Resubmit", do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
    - a. Do not permit submittals marked "Rejected" or "Resubmit" to be used at the Project site, or elsewhere where Work is in progress.
  - 4. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required".

PART 2 MATERIALS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK METROPARK  
STONY CREEK LANDING  
HCMA PROJECT NO. 509-16-532  
AEW PROJECT NO. 0215-0038

PROJECT SUBMITTAL FORM

		SUBMITTAL NO.:			
		SPEC. SECTION NO.:			TITLE:

1. ROUTING	2. CONTACT INFORMATION
------------	------------------------

Step	From	Date Sent	To	Date Received	Manufacturer	Trade Contractor
1	Trade Contr. Or Manuf.		GC		Firm Name	
2	GC		Consultant		Contact	
3	Consultant		GC and HCMA		Phone; Fax	
4	GC		Trade Contr. Or Manuf.		General Contractor	Owner
					Firm Name	
					Contact	
					Phone; Fax	

Consultant Contact:

Consultant Phone:

Fax:

3. SUBMITTAL INFORMATION		2. FOR ARCH. USE: Route as indicated, fill in Action Code				
All items listed below are specified in the SAME Specifications Section identified a the top of this page		<input type="checkbox"/> Eng.	<input type="checkbox"/> Mech.	<input type="checkbox"/> Elec.	<input type="checkbox"/> Other	
		Date	Date	Date	Date	
Item	Kind	Description or Drawing Number and Title	Initials	Initials	Initials	Code
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
Codes: 1: Approved – Proceed 2: Approved as Noted – Revise and Proceed 2R: Approved As Noted – Revise and Proceed/ Resubmit for Record 3: Not Approved – Revise and Resubmit X: Not Requested by Contract Documents						

END OF FORM



SECTION 01300B  
APPENDIX 'B' SUBMITTAL NUMBERING AND TRANSMITTAL INSTRUCTIONS

PART 1 - GENERAL

1.1 SUBMITTAL ENTRIES

- A. Fill out the following items on the submittal forms obtained from the Owner. The item titles are specified here as they appear on the form, with numbers added here and on the Appendix 'A' for clarity of discussion. (Note that Appendix 'A' is not an original and shall not be used for reproduction.) Certain items are accompanied by a brief explanation; items that warrant further explanation are discussed under the respective item numbers and titles in Article 1.2, which follows.
1. Submittal No. – A five-digit number used to identify, in sequence, Contractor's submittals packages: Discussed in Article 1.2. Include suffix 'R' if resubmittal.
  2. Specification Section No. – Number of Specification Section in which submittal corresponds. A five-digit number followed by three or four identifying numbers or letters. *Do not include items from more than one Specifications Section on one submittal form.*
  3. Title – Title of Specification Section.
  4. Contact Information – Fill in Contact Information for all trades and manufacturer information.
  5. Kind – Type of document submitted (e.g., shop drawing, catalogue cut, sample)
  6. Description – Description of each submittal part. Discussed in Article 1.2.
- B. The Architect will fill out items on the form not identified in the preceding paragraph.

1.2 FURTHER EXPLANATIONS

A. Submittal No.

1. Assign a permanent, five-digit number to each submittal package. Begin with 00001 and advance the number by one for each new package submitted throughout the Contract. Note that submittal packages may be referred to, from time-to-time, simply as submittals.
2. Do not include in a single submittal package, that is, under a single submittal number on the same submittal form, the required submittals from more than one Section of the Specifications or from more than one Drawing Package (e.g. – do not include Division 16 Submittals from Drawing Package 1 of 2 with submittals for Division 16 from Drawing Package 2 of 2.)
3. Do not use a given submittal number more than once throughout the Contract, that is, for more than one submittal package. But:

Where the construction schedule requires approval of individual items at different times, it may be advantageous to divide the submittal requirements of a given Specifications Section into two or more

submittal packages (partial submittals) in order to expedite the review and return process.

4. Note Well: The Aquatic Designer/Architect will not break out an individual part of a submittal package for handling separate from the rest of the package.
5. If the Contractor has an established submittals numbering system, consult with the Owner and Aquatic Designer/Architect in advance of the first submittal to work out a coordinated system.

B. Kind

1. Identify each submittal item number per the following element abbreviations for the respective categories:
  - a. Shop Drawings: Use the symbol n+n, where the left number equals the number of pages included in the part and the right number equals the number of prints included in the part.
  - b. Product Data
    - bkl (booklet)
    - bro (brochure)
    - cat (catalog)
    - cc (catalog cut)
    - cht (chart)
    - cpy (copy)
    - ltr (letter)
  - c. Samples
    - sam (samples)
2. Note in particular and make use of, the indication code for the number of Shop Drawings pages and prints Contractor has included in the submittal part (Subparagraph 1.2B.1.a. – Shop Drawings:, immediately above.)

C. Description

1. Narrate the most definitive description of the submittal part.

1.3 RESUBMITTALS

- A. In making out a submittal form to transmit a resubmittal, take care to enter the required information in exactly the same way, and with the same words, as that entered for the initial submittal. Failure to do so may result in the resubmittal being unnecessarily delayed in the handling.

PART 2 MATERIALS



NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION



SECTION 01310  
COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENT

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for coordination of construction activities by the Contractor.
- B. This Section also indicates that a separate contractor may be on-site to perform the reconstruction of the Stony Creek Boat Launch. In the event that this occurs, the separate contractors shall coordinate scheduling and allow time in construction schedule for liaison and potential delays in work.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 1 Section "Temporary Construction Facilities" for requirements for the Contractor's Construction Site including temporary fencing.

1.3 GENERAL COORDINATION PROVISIONS

- A. Drawings and general provisions of Contract, including General Conditions and other Division-1 Specification Sections, apply to this Section.
- B. Carefully review and compare Contract Documents before proceeding with fabrication and installation of Work. Promptly advise Owner of any error, inconsistency, omission, or apparent discrepancy discovered.
- C. Allow time in construction schedule for liaison with Owner's Consultants; establish procedures for handling queries and clarifications. Use "Request for Interpretation" form for requesting information. Copy of form is Section 01310A. An electronic version of form shall be provided to the Contractor from the Owner.
- D. Contractor shall provide their primary e-mail address and those of their sub-contractors for distribution of necessary electronic correspondence.
- E. Coordinate scheduling, submittals, and Work under the various Specification sections to avoid conflicts and ensure efficient and orderly sequence of installation of interdependent construction elements.
- F. Coordinate work under the various Specification sections having interdependent responsibilities for installation, connection, and operation.

- G. Verify that characteristics of operating equipment are compatible with building utilities and services. Promptly advise Owner of incompatibilities.
- H. Except as otherwise indicated, conceal pipes, ducts, conduit and wiring in construction. Coordinate locations of fixtures and outlets with finish elements.
- I. Make provision to accommodate items scheduled for later installation.
- J. Coordinate in the field with affected trades for proper relationship to Work based on Project conditions.
- K. Notify Owner of conflicts and other coordination issues requiring resolution prior to commencing construction in each affected area.

1.4 CONSTRUCTION SITE:

- A. The construction site is located in Stony Creek Metropark, a regional public park operated by the Authority. The site is in or near areas which shall remain open to the public at all times, during park hours. The Contractor shall prohibit public access into the work areas, by cordons, barricades, fencing, or other means, and shall restrict his operations to only those areas directly affected by the work. See section 15000, "Temporary Construction Facilities," paragraph 2.1F for specifications on construction fencing.
- B. The Contractor shall be responsible for the protection of park property during the period of construction and shall exercise care to prevent damage. Any damage to park property resulting from the Contractor's operations shall be repaired or replaced by the Contractor at his own expense.
- C. No work will be permitted on Sundays or Holidays. Saturday work will be permitted only upon prior approval of the Engineer.
- D. A separate contractor may be on-site to perform the reconstruction of the Stony Creek Boat Launch. In the event that this occurs, the separate contractors shall coordinate scheduling and allow time in construction schedule for liaison and potential delays in work.

- 1.5 STAKING OUT WORK: The Engineer will determine all grade elevations and alignments, and will provide all staking necessary to assure conformance with the design. The Contractor shall preserve all construction stakes for the Engineer's use. The Contractor shall exercise proper precaution to verify existing conditions shown on the Drawings before laying out the work. The Contractor will be held responsible for any errors resulting from failure to exercise such precaution. The Contractor shall not take advantage of any obvious errors or omissions on the plans and shall request clarification of any questions that arise prior to staking. If construction stakes are lost or removed by the Contractor's operations prior to inspection by the Engineer, the Contractor shall reset those stakes as necessary for the Engineer's inspection or, at the Engineer's discretion, the Contractor shall pay the Authority its cost for resetting stakes. The Contractor shall notify the Engineer five days before construction stakes

are to be placed and elevations determined, and/or before commencing any work. The Engineer will provide staking as follows:

- A. Buildings: Principal Building Corners and Elevations
- B. Site developments, plazas, walks, landscape features and amenities: Corners, line intersections, center points, points of tangency, and associated grades and elevations.
- C. Pavements: Corners, line intersections, center points, points of tangency, and associated grades and elevations.
- D. Earthwork: Rough Grade staking.
- E. Utilities: Manhole locations, pipe alignments and grades.

#### 1.6 COORDINATION OF SPACE

- A. Coordinate use of Project space and sequence of installation of mechanical and electrical Work. Follow routings shown for pipes, ducts and conduits as closely as practicable, with due allowance for available physical space. Make runs parallel with building lines unless otherwise indicated. Utilize space as efficiently as possible to maximize accessibility for other installations, for maintenance, and for repairs.
- B. Layout of mechanical and electrical and related products indicated on Drawings is diagrammatic. Variations in alignment, elevation, and detail required to avoid interferences and satisfy architectural and structural limitations are not necessarily shown.
- C. Prior to installation of materials and equipment, review and coordinate Work with Architectural and Structural Drawings to establish exact space conditions. Where available space is inadequate or where reasonable modifications are not possible, request information from Architect before proceeding.
- D. Openings and penetrations through floor, walls, ceiling and roof shall be provided to accommodate sleeves, conduits, inserts, ductwork, piping and equipment, as required.
- E. Coordinate installation to prevent conflicts and cooperate in making, without extra charge, reasonable modifications in layout as needed.
- F. Provide clear access to control points, valves, strainers, control devices, and specialty items of every nature related to such systems and equipment to obtain maximum head room and access space. Provide adequate clearances as necessary for operation and maintenance.

#### 1.7 CONTRACTOR EMPLOYEES

- A. The Owner may, by notice in writing, require the Contractor to remove from the work any employee or subcontractor employee the Owner deems incompetent, careless or otherwise objectionable. The Contractor shall not be entitled to additional compensation as a result of such removal.

### PART 2 MATERIALS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

HURON-CLINTON METROPOLITAN AUTHORITY  
Stony Creek Metropark  
Stony Creek Landing  
HCMA PROJECT NO. 509-16-532  
AEW PROJECT NO. 0215-0038

Anderson, Eckstein & Westrick, Inc.

REQUEST FOR INTERPRETATION (ELECTRONIC)

RFI NO:		DATE TRANSMITTED:	
---------	--	-------------------	--

RESPONSE REQUESTED FROM:	<input type="checkbox"/> Civil	<input type="checkbox"/> Struct.	<input type="checkbox"/> Arch.	<input type="checkbox"/> Mech.	<input type="checkbox"/> Elect.	<input type="checkbox"/> Other:	
--------------------------	--------------------------------	----------------------------------	--------------------------------	--------------------------------	---------------------------------	---------------------------------	--

BRIEF DESCRIPTION OF RFI [give details below]:	
--	--

PROVIDE	Section No.		Section No.		Section No.	
SPECIFICATION	Para. No.		Para. No.		Para. No.	
REFERENCES						

PROVIDE DRAWING REFERENCES: \_\_\_\_\_

(Contractor) requests interpretation of the following from (HCMA/Consultant Name):

[Note: Request only one interpretation per RFI]

_____
-------

Requested by: \_\_\_\_\_

NAME:		DATE:	
-------	--	-------	--

ATTACHMENTS:	<input type="checkbox"/> YES	<input type="checkbox"/> NO
--------------	------------------------------	-----------------------------

After saving file, e-mail as attachment to e-mail, Fax Number.

HCMA/Consultant Name response: \_\_\_\_\_

Date Received:	
----------------	--

--

NAME/COMPANY:		DATE:	
---------------	--	-------	--

ATTACHMENTS: ☐ YES ☐ NO

Date Transmitted:		Indicate the recipients and the means of transmittal below:			
Distributed to:		E-mail	Fax	Hand	Mail
(Contractor):		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HCMA:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

HURON-CLINTON METROPOLITAN AUTHORITY  
Stony Creek Metropark  
Stony Creek Landing  
HCMA PROJECT NO. 509-16-532  
AEW PROJECT NO. 0215-0038

Anderson, Eckstein & Westrick, Inc.

Consultant Name:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



SECTION 01420  
REFERENCES

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

A. GENERAL

1. Reference standards are incorporated into the Specifications by referring to a number, title, or other designation of the standard referenced. The provisions of a standard so referenced are a part of the Section of the Specifications in which the reference is made, and thus part of the Contract Documents, as though the standard were duplicated in the Section in its entirety.

B. Incorporation of standards into the Specifications

1. The Standard may be mentioned in Part 1, 2 or 3 of a Specification Section.
2. The latest issues of the industry standards referenced herein form a part of these specifications to the extent referenced unless otherwise indicated. They may be referred to in the text by abbreviation and by basic designation only.

1.2 REFERENCE SPECIFICATIONS: Michigan Department of Transportation (MDOT) Standard Specifications (2012 Edition) and MDOT Standard Plans (latest editions), form a part of these specifications to the extent referenced, or as deemed applicable by the Engineer. MDOT Standard Specifications or Plans are referred to in the text by Section or Plan number only. The following changes in terminology used in MDOT publications shall apply:

- A. "State" shall be changed to "Authority", meaning the Huron-Clinton Metropolitan Authority.
- B. "Department" shall be changed to "Board of Commissioners of the Huron-Clinton Metropolitan Authority".
- C. "Commission" shall be changed to "Board of Commissioners of the Huron-Clinton Metropolitan Authority".
- D. "Engineer" shall refer to the Designated Project Engineer of the Huron-Clinton Metropolitan Authority.

PART 2 MATERIALS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01450  
QUALITY CONTROL SERVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENT

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for quality control services.
- B. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the Owner.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
- D. Requirements of this Section relate to customized fabrication, placement and installation procedures, not factory production of standard products.
  - 1. Specific quality control requirements for individual construction activities are specified in this Section. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.
  - 2. Inspections, tests and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
  - 3. Requirements for the Contractor to provide quality control services required by the Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 CONTRACTOR RESPONSIBILITIES

- A. Contractor Responsibilities: The Contractor shall provide inspections, tests and similar quality control services specified in this Section and required by governing authorities. Costs for these services shall be included in the Contract Sum.
  - 1. The Contractor shall employ and pay an independent agency acceptable to the Authority, to perform specified quality control services. Inspection of the work and approval of progress payments by the Authority will not relieve the Contractor from performing in accordance with the Contract Documents.

2. The Owner reserves the right to engage and pay for the services of an independent agency to perform additional inspections and tests.
  3. Retesting: The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.
    - a. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction. At the Architect's direction, a different testing service may be used for retesting at no additional cost to the Owner.
  4. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to:
    - a. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
    - b. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
    - c. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
    - d. Providing the agency with a preliminary design mix proposed for use for material mixes that require control by the testing agency.
    - e. Security and protection of samples and test equipment at the Project site.
- B. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections shall cooperate with the Architect and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.
1. The agency shall notify the Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
  3. The agency shall not perform any duties of the Contractor.
- C. Coordination: The Contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
1. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities.

#### 1.4 SUBMITTALS

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

#### 1.5 QUALITY ASSURANCE

- A. Qualification for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, which are pre-qualified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.
  - 1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State of Michigan.

#### 1.06 TESTING REQUIREMENTS

- A. Geotechnical Testing
  - 1. Inspect and test undisturbed soil subgrades prior to placement of engineered fill or concrete foundations.
  - 2. Inspect and test engineered fill and aggregate subgrades prior to placement of foundation or slab-on-grade concrete.

B. Structural Excavation, Backfill and Compaction

1. Soil Classification of Satisfactory Excavated and Borrow Material: Determine in accordance with Uniform Soil Classification System (ASTM D2487).
2. Granular Materials: Grain size analysis and for satisfactory Excavated Material and Borrow Material only, liquid limit and plasticity index.
3. Optimum Moisture-Maximum Density Curves: For soil materials having a well-defined moisture-density relationship, make for each kind of subgrade material under fills and for each kind of soil material for fills and backfills in accordance with the Modified Proctor Test Method D (AASHTO T180 or ASTM D1557) for soil materials around structures.
4. Relative Density Tests: For cohesionless free-draining soil materials not having a well defined moisture density relationship curve, make for each kind of soil specified in Paragraph 1.11.C.1.c in accordance with ASTM D2049.
5. Soil Bearing Tests: Make penetration and unconfined compression test as required to verify soil-bearing capacity under concrete footings and foundation walls.
6. Field Density Tests:
  - a. determine by balloon method (AASHTO T205 or ASTM D2167) or by sand cone method (AASHTO T191 or ASTM D1556) or nuclear methods (ASTM D2922).
  - b. Make field density tests of compacted subgrade soil on basis of 3 tests plus one additional test per 10,000 sq. ft. area or fraction thereof.
  - c. Make 3 field density test of each lift of compacted fill or backfill placed each day.

C. Trenching, Backfilling and Compacting

1. Laboratory Tests
  - a. As specified in Paragraph 1.11.C.3 for satisfactory excavated material, borrow material, and Class 2 granular material.
  - b. As specified in Paragraph 1.11.C.5 for aggregate base course material.
2. Field Density Tests:
  - a. determine by balloon method (AASHTO T205 or ASTM D2167) or by sand cone method (AASHTO T191 or ASTM D1556) or nuclear methods (ASTM D2922).
  - b. Make at least 3 field density tests of compacted subgrade soils and compacted backfill placed each day.

D. Excavating, Filling and Grading: All tests required under section 1.11.C.1 above shall apply.

E. Walkway Excavation Backfill and Compaction:

1. Soil Classification of Satisfactory Excavated and Borrow Material: Determine in accordance with Uniform Soil Classification System (ASTM D2487).
2. Optimum Moisture-Maximum Density Curves: Make for each kind of subgrade material and for each kind of soil material for fills or backfills in accordance with the Modified Proctor Test Method D (AASHTO T180 or ASTM D1557).
3. Field Density Tests:
  - a. determine by balloon method (AASHTO T205 or ASTM D2167) or by sand cone method (AASHTO T191 or ASTM D1556) or nuclear methods (ASTM D2922).
  - b. Make field density tests of compacted subgrade soil on basis of 3 tests plus one additional test per 10,000 sq. ft. area or fraction thereof.

F. Subdrainage System

1. Determine grain analysis of aggregate bedding in accordance with ASTM C 136.
2. Make relative density test of aggregate bedding materials in accordance with ASTM D2049.
3. Make field density tests of compacted aggregate bedding material on the basis of one test per 500 cubic yards of material in accordance with ASTM D2922.

G. Aggregate Base Course

1. Determine maximum density and optimum moisture content for aggregate base material by ASTM D 1557, method D.
2. Make a minimum of three field density tests on each day's final compaction on each aggregate course (AASHTO T191) or more specifically below:
  - a. (Concrete Walkway Pavement) – field density tests every 50 feet.
  - b. (Bituminous Aggregate Concrete Pavement) – field density tests every 100 feet.
3. Sample and test aggregate as necessary to insure compliance with specification requirements for gradation and quality.

H. Bituminous Aggregate Concrete Pavement

(Roadway Paving)

1. Verify Mix Design by testing standard cylinders for Asphalt Content, Percent Air Voids, Aggregate Gradation, Percent of Voids in Mineral Aggregate. Take a minimum of three samples per day for the initial 1,000 Ton of asphalt and 3 tests per day for every 1,000 Ton thereafter. Samples shall be taken on-site in morning, afternoon, and evening or at the discretion of the Engineer.
2. Field Density Tests:
  - a. Determine by nuclear density methods (ASTM D2922).

- b. Make field density tests of compacted bituminous aggregate on basis of one test every 50 linear feet.

(Trail Paving)

1. Verify Mix Design by testing standard cylinders for Asphalt Content, Percent Air Voids, Aggregate Gradation, Percent of Voids in Mineral Aggregate. Take a minimum of three samples per day for the initial 500 Ton of asphalt and one test for every 500 Ton thereafter. Initial samples shall be taken on-site in morning, afternoon, and evening or at the discretion of the Engineer.
2. Field Density Tests:
  - a. Determine by nuclear density methods (ASTM D2922).
  - b. Make field density tests of compacted bituminous aggregate on basis of one test every 50 linear feet.

I. Storm Sewerage Systems

1. Testing-in-General
  - a. Test sewer line within 30 days after completion of installation, unless otherwise directed by the Engineer.
  - b. Provide labor, water, equipment for performing test and making measurement. Bear all costs in connection with tests.
  - c. Perform test by use of competent and reliable persons skilled in conducting the required tests.
  - d. Give written notice to the Engineer, giving date and time of starting tests for sewer line so as to be received by the Engineer 48 hours prior to date of tests.
2. Cleaning:
  - a. Prior to tests, clean and inspect for major defects all sewer lines.
  - b. Remove foreign material from sewer lines and related appurtenances by flushing with water.
3. Visual Test:
  - a. Inspect sewer line visually to verify accuracy of alignment and freedom from debris and obstructions.
  - s. The full diameter of the sewer pipe for straight alignments shall be visible when viewed between consecutive sewer appurtenances.
4. Report of Tests:
  - a. The results of all tests specified in this Section shall be recorded by the Contractor conducting the tests and submitted to the Engineer.
  - b. The information submitted shall include the following:
    - ii. Project Title and Project Number
    - ii. Contractor Name.
    - iii. Name of Inspection Agency
    - iv. Date the tests were performed.
    - v. Location, length and size of pipeline tested.
    - vi. Names of personnel conducting tests.



- vii. Names of witnesses.
- viii. Method of tests conducted.
- ix. Results of tests together with calculations.

- 5. Adjustments, Repairs, and Re-tests:
  - a. If the system does not meet the requirements of the tests conducted, the Contractor shall be required to make adjustments, repairs, and alterations as required to meet the specified test results.
  - b. In addition, repair all visible leaks and cracks regardless of test results.
  - c. Accomplish repairs by re-excavating the sewer, making the necessary repairs, replacing pipe bedding, backfill, and other work as specified for original work.
  - d. In replacing defective pipe, pipe fittings and joints, use only new materials meeting the requirements of materials as specified for original work.
  - e. After the completion of repairs, repeat tests as directed by the Engineer.

J. Water Systems

- 1. Testing-in-General
  - a. Provide labor, water, equipment for performing tests and making measurements. Bear all costs in connection with tests.
  - b. Perform tests by use of competent and reliable persons skilled in conducting the required tests.
  - c. Give written notice to the Engineer, giving date and time of starting tests for waterline so as to be received by the Engineer 48 hours prior to the test.
  - d. Provide proper appliances and facilities for draining the waterline without injury to the Work and surrounding area.
- 2. Hydrostatic Test:
  - a. Before remainder of trench above pipe bedding is backfilled, flush pipe and hydrostatic test for leakage each section of waterline between gate valves or test plugs.
  - b. Provide all necessary test pumps, pipe connections, temporary blow-offs, caps, or plugs, and all other apparatus including gauges and meters.
  - c. Before applying test pressure, all air shall be expelled from the pipe. If necessary to accomplish this, make taps at the point of highest elevation in the pipe and subsequently close such openings prior to test, with tight threaded brass plugs.
  - d. Make preliminary testing of waterline to ascertain if there are any major leaks.
  - e. Test waterline by filling the pipe with clean water under a minimum hydrostatic pressure of 150 psi based on the elevation of the highest point on the line to be tested and corrected to the elevation of the test gauge.
  - f. Maintain pressure for 2 hours.

- g. Leakage, as measured by the quantity of water pumped into the waterline to maintain the specified minimum hydrostatic pressure during the test, shall not exceed the following amounts in a 2 hour period:
    - aa. 6" pipe - 0.47 gallons per 100 lineal feet
    - bb. 8" pipe – 0.63 gallons per 100 lineal feet
    - cc. 12" pipe - 0.95 gallons per 100 lineal feet
    - dd. 16" pipe – 1.26 gallons per 100 lineal feet
  - h. The allowable leakage is for standard 12' lengths of pipe. If 16' or 18' lengths of pipe are used, the allowable leakage shall be reduced in the ratio of 12' to the length of pipe used.
  - i. Make final pressure tests in the presence of the Engineer. If it is necessary for the Engineer to supervise more than one pressure test, the Contractor shall be liable for additional cost involved.
3. Report of Tests:
- a. The results of all tests specified in this Section shall be recorded by the Contractor conducting the tests and submitted to the Engineer.
  - b. The information submitted shall include the following:
    - i. Project Title and Project Number
    - ii. Contractor Name.
    - iii. Name of Inspection Agency
    - iv. Date the tests were performed.
    - v. Location, length and size of pipeline tested.
    - vi. Names of personnel conducting tests.
    - vii. Names of witnesses.
    - viii. Method of tests conducted.
    - ix. Results of tests together with calculations.
4. Adjustments, Repairs, and Re-tests:
- a. If the system does not meet the requirements of the tests conducted, the Contractor shall be required to locate and repair the leaks.
  - b. In addition, repair all visible leaks and cracks regardless of test results.
  - c. Accomplish repairs by re-excavating the waterline, making the necessary repairs, replacing pipe bedding, backfill, and other work as specified for original work.
  - d. In replacing defective pipe, pipe fittings and joints, use only new materials meeting the requirements of materials as specified for original work.
  - e. After the completion of repairs, repeat tests until results show that leakage has been reduced to below the allowable maximum.

K. Sanitary Sewerage Systems

- 1. Testing in General
  - a. Test sewer line within 30 days after completion of installation, unless otherwise directed by the Engineer.
  - s. Provide labor, water, equipment for performing tests and making measurements. Bear all costs in connection with tests. Perform tests

- by use of competent and reliable persons skilled in conducting the required tests.
- c. Install watertight bulkheads in suitable manner to isolate test sections from rest of sewer line. Maintain such bulkheads in place until sewer has passed acceptance tests.
  - d. If dewatering methods have been employed to facilitate construction of the sewer, shut off dewatering equipment 24 hours prior to start of testing. However, maintain dewatering equipment in position for operation if required until completion of acceptance tests.
  - e. Give written notice to the Engineer, giving date and time of starting tests for sewer line so as to be received by the Engineer 48 hours prior to date of tests.
2. Cleaning
- a. Prior to tests, clean and inspect for major defects all sewer lines.
  - b. Remove foreign material from sewer lines and related appurtenances by flushing with water.
3. Visual Test
- a. Inspect sewer line visually to verify accuracy of alignment and freedom from debris and obstructions.
  - b. The full diameter of the sewer pipe for straight alignments shall be visible when viewed between consecutive manholes.
4. Leakage Tests:
- a. General:
    - ii. All sewer lines connecting directly or indirectly to the sanitary sewerage system shall be subjected to water infiltration, water exfiltration, low pressure air exfiltration tests, or a combination thereof, in accordance with the requirements specified in subparagraphs 11.d.ii-iv.
    - ii. Measure ground water elevation at the time tests are taken. This ground water elevation shall determine the testing procedure to be used.
    - iii. Limit the maximum length of sewer tested at one time to 1600', unless otherwise approved by the Engineer.
  - b. Water Infiltration Test:
    - i. Subject to Water Infiltration Test:
      - aa. All sewers over 24" diameter, unless otherwise specified hereinafter.
      - bb. All sewer lines 24" diameter or smaller where the ground water elevation above the top of the pipe is over 7'.
    - ii. Measure water infiltration by a weir or current meter placed in the appropriate manhole.
    - iii. Maximum allowable water infiltration shall not exceed 250 gallons per mile per inch diameter of sewer per 24 hours.
  - c. Water Exfiltration Test:
    - i. Subject to water exfiltration test: All sewer lines over 24" diameter where the ground water elevation above the top of the pipe is 7' or

- less, unless otherwise required by the Engineer.
- ii. For the purpose of water exfiltration testing, the internal water level shall be equal to the external water level plus 7' as measured from the top of the highest pipe in the system being tested. This could be either a house lead or a lateral. However, the maximum total height of water above the invert of the pipe at the lower end, shall not exceed 20'. A prospective test that will exceed this 20' will not be exceeded.
  - iii. The actual water exfiltration or leakage from the sewer line shall be measured by recording the volume of water lost over a given period of time in a standpipe or pipes connected in the upstream or downstream or both, manhole or the upstream manhole may be used provided the test water level is below the bottom of the tapered section.
  - iv. It may be necessary to add a measured amount of water during the testing time interval to maintain water in the stand pipe at the specified level such that the total volume of water lost will be based upon the amount of water added and the difference in elevation of water at end of testing converted to gallons.
  - v. When the standpipe method is used the time interval to record the difference in elevation of the water surface shall be a minimum of 15 minutes.
  - vi. When the upstream manhole method is used the time interval shall be a minimum of 2 hours.
    - aa. Approximately 4 hours shall elapse after the test section is filled with water to permit the escape of trapped air and to allow for maximum absorption. After such absorption and escape has taken place, water shall be added to the specified test level and the test begun.
    - bb. Maximum allowable water exfiltration shall not exceed 250 gallons per mile per inch diameter of sewer per 24 hours.
- d. Low Pressure Air Exfiltration Test
- i. Subject to low pressure air exfiltration test:
    - aa. All sewer lines 24" diameter or smaller where the ground water elevation above the top of the pipe is 7' or less.
    - bb. All plastic sewer lines regardless of the ground water elevation.
  - ii. Test sewer lines in increments between manholes.
  - iii. Plug sewer line at each manhole. Provide plugs designed to hold against the test pressure and obtain an air-tight seal. Provide one plug having an orifice through which air can be introduced into the sewer line.
  - iv. Provide and connect an air supply line to plug with orifice. Fit the air supply line with suitable control valves and a pressure gage for continually measuring the air pressure in the sewer line. Provide pressure gage having a minimum diameter of 3-1/2" and range of 0 to 10 psig, with minimum divisions of 0.10 psig and accuracy of plus or minus 0.04 psig.

- v. Pressurize sewer line to 4 psig greater than the greatest back pressure caused by ground water over the top of the pipe. Allow at least 2 minutes for the air pressure to stabilize between 3.5 and 4.0 psig. If necessary, add air to the sewer line to maintain a pressure of 3.5 psig or greater.
- vi. After stabilization period, close air supply control valve so that no more air can enter the sewer line.
- vii. Record the air pressure in the sewer line and start timing the test. Do not begin test if the air pressure is less than 3.5 psig, or such other pressure as is necessary to compensate for ground water level.
- viii. The time required for the air pressure to decrease 1.0 psig during the test shall be not less than the time shown in the approved "Air Test Tables."
- ix. Manholes on sewers to be subjected to air tests shall be equipped with air test nipples as specified under Paragraph 3.04.I.
- x. Prior to the air test, determine the ground water elevation by blowing air through the air test nipple at manholes to clean it and then connect a clean plastic tube to the nipple. Suspend the plastic tube vertically in the manhole and determine the ground water elevation by observing the water level in the tube.
- xi. Adjust air pressure to compensate for the maximum ground water level above the top of the sewer line to be tested.
- xii. After all tests are performed and the sewer is ready for final acceptance, plug manhole air test nipple in an acceptable manner.
- xiii. The air test can be hazardous under certain conditions. It is extremely important that all air plugs be properly secured and that care be exercised during the test and in the removal of plugs. A 15" diameter plug with 4.5 psi applied to it exerts almost 800 pounds of force. This is an example of the potential hazard that exists if plugs are not correctly installed or are not completely relieved from air pressure before being removed. As a safety precaution, it is suggested that pressurizing equipment be provided with a 10 psi pressure relief device to reduce hazards and to avoid over-pressurization of the sewer lines.

5. Pipe Deflection Test:

- a. When plastic sewer pipe is used, make a deflection test on 50% of the linear feet of the installed plastic sewer pipeline on completion of all work, including leakage test, backfilling, and placement of any paving, concrete or other superimposed loads.
- b. The completed installation shall at no point have out-of-round pipe deflection greater than 5%.
- c. Pipe sizes to be tested will be selected by the Engineer.
- d. Determine deflection by pulling a "go-nogo" gage through the pipe.
- e. If a stoppage of the "go-nogo" gage occurs, test that particular pipeline with deflectometer and record the amount of deflection.
- f. If pipe deflection exceeds the percentage specified above, that particular pipe shall be uncovered and allowed to rebound, pipe

bedding, backfilling and compaction procedures repeated, and the pipe again tested for deflection.

6. Report of Tests:
  - a. The results of all tests specified in this Section shall be recorded by the Contractor conducting the tests and submitted to the Engineer.
  - b. The information submitted shall include the following:
    - i. Project Title and Project Number
    - ii. Contractor Name.
    - iii. Name of Inspection Agency
    - iv. Date the tests were performed.
    - v. Location, length and size of pipeline tested.
    - vi. Names of personnel conducting tests.
    - vii. Names of witnessed.
    - viii. Method of tests conducted.
    - ix. Results of tests together with calculations.
7. Adjustments, Repairs and Retests:
  - a. If the system does not meet the requirements of the tests conducted, the Contractor shall be required to locate and repair the leaks.
  - b. In addition, repair all visible leaks and cracks regardless of test results.
  - c. Accomplish repairs by re-excavating the sewer, making the necessary repairs, replacing pipe bedding, backfill, and other work as specified for original work.
  - d. Do not repair pipe from inside of the pipe by use of chemical grout applied under pressure or other method, unless approved by the Engineer.
  - e. After the completion of repairs, repeat tests until results show that leakage has been reduced to below the allowable maximum.

L. Cast-in-place Concrete

1. The testing laboratory services will provide the testing requirements for concrete specified in this section and Ready-mixed Structural Concrete and Ready-mixed Site Concrete.
2. Testing Concrete Structure for Strength
  - a. The strength of the concrete structure-in-place will be considered potentially deficient if it does not comply with any of the requirements which control strength of the structure, including the following conditions:
    - i. Failure of the concrete to meet compressive strength tests as evaluated under Section 02751 Cement Concrete Pavement.
    - ii. Reinforcement not conforming to the requirements specified under Section 02751 Cement Concrete Pavement.
    - iii. Concrete curing and protection of concrete against temperature extremes during placement and curing not conforming to the requirements herein specified.
    - iv. Concrete work subjected to damaging mechanical disturbances,

- particularly load stresses, heavy shock and excessive vibrations.
- v. Poor workmanship likely to result in deficient strength.
- b. Where there is evidence that the strength of the concrete structure-in-place does not meet specification required as determined by the Engineer, the Contractor shall at his own expense, make compressive strength tests of cores drilled from hardened concrete in accordance with ASTM C42 and as follows:
- i. At least three representative samples shall be taken from each member or area of concrete-in place that is considered potentially deficient. The location of cores shall be determined by the Engineer.
  - ii. Cores shall be tested saturated-surface-dry if the concrete they represent will be wet at any time during the use of the completed structure.
  - iii. Cores shall be tested air-dry if the concrete they represent will be dry at all times during the use of the completed structure.
  - iv. Cores shall be made by a concrete testing laboratory approved by the Engineer.
  - v. Test results shall be reported in writing to the Engineer on the same day the test is made. Reports shall contain Project name, Project No., date, name of Contractor, name of concrete testing service, location of each test core in the structure, concrete class and designation represented by each core sample, compression breaking strength and type of break, length of core test specimen before capping, compression strength after correcting for length-diameter ratio, direction of application of the load and the core test specimen with respect to the horizontal plane of the concrete as placed, and the moisture condition of the core test specimen at the time of testing.
  - vi. Strength of cores from each member or area will be considered satisfactory if their average compressive strength is equal to or greater than 90% of the 28 day compressive strength of the concrete class designation they represent.
  - vii. Core holes shall be filled with patching mortar and finished to match the adjacent concrete surfaces.
- c. If the results of the core tests are unsatisfactory, or if core test are impracticable to obtain, the Contractor shall conduct, at his own expense, static load tests in the presence of the Engineer. Such tests shall be made and evaluated in accordance with Chapter 4 of ACI 318.
- d. For concrete work that is found inadequate either by core tests or by static load tests, the Contractor shall, without cost to the Owner, either:
- i. Remove and rebuild.
  - ii. Add additional concrete construction to make the structure adequate.

M. Ready-Mixed Structural Concrete

1. Conduct strength tests of the concrete during construction in accordance with the following:
  - a. Secure composite samples in accordance with ASTM C172. Each sample shall be obtained from a different batch of concrete on a random basis, avoiding any selection of the test batch other than by a number selected at random before commencement of concrete placing.
  - b. Mold and cure 4 specimens for each strength test sample in accordance with ASTM C31. Any deviations from the requirements of ASTM C31 shall be reported in the test reports. Cure one specimen in the field and cure three specimens in the laboratory.
  - c. Test specimens in accordance with ASTM C39. The field-cured specimen shall be tested at seven days for information, two of the laboratory-cured specimens shall be tested at 28 days for acceptance, and one specimen retained in reserve for later testing if required. The acceptance test results shall be the average of the strength of the two specimens tested at 28 days. If one specimen in a test manifests evidence of improper sampling, molding or testing, it shall be discarded and the strength of the reserve cylinder shall be tested and added for an average strength. In the event both specimens in a test show any of the above defects, the entire test shall be discarded. When high early strength concrete is used, the field-cured specimen shall be tested at 3 days for information and the two laboratory-cured specimens shall be tested at 7 days for acceptance. 6" x 12" cylinders shall be used.
  4. Make at least one strength test for each 30 cu yd or fraction thereof, of each concrete class designation placed in any one day except that in no case shall any concrete class designation be represented by less than 5 strength tests.
  5. Determine slump if concrete appears to vary. Measure slump in accordance with ASTM C143.
  6. Determine air content of the concrete sampled for each strength test in accordance with ASTM C231.
  7. Determine temperature of concrete sampled for each strength test.
2. Submit four copies of concrete reports of each concrete class designation for slump, air content and strength tests as specified in Section 16 of ASTM C94.

N. Ready-Mixed Site Concrete

1. Conduct strength tests of the concrete during construction in accordance with the following:
  - a. Secure composite samples in accordance with ASTM C172. Each sample shall be obtained from a different batch of concrete on a random basis, avoiding any selection of the test batch other than by a number selected at random before commencement of concrete placing.
  - b. Mold and cure 4 specimens for each strength test sample in accordance with ASTM C31. Any deviations from the requirements of



ASTM C31 shall be reported in the test reports. Cure one specimen in the field and cure three specimens in the laboratory.

- c. Test specimens in accordance with ASTM C39. The field-cured specimen shall be tested at seven days for information, two of the laboratory-cured specimens shall be tested at 28 days for acceptance, and one specimen retained in reserve for later testing if required. The acceptance test results shall be the average of the strength of the two specimens tested at 28 days. If one specimen in a test manifests evidence of improper sampling, molding or testing, it shall be discarded and the strength of the reserve cylinder shall be tested and added for an average strength. In the event both specimens in a test show any of the above defects, the entire test shall be discarded. When high early strength concrete is used, the field-cured specimen shall be tested at 3 days for information and the two laboratory-cured specimens shall be tested at 7 days for acceptance. 6" x 12" cylinders shall be used.
  - d. Make at least one strength test for each 30 cu yd or fraction thereof, of each concrete class designation placed in any one day except that in no case shall any concrete class designation be represented by less than 5 strength tests.
  - e. Determine slump if concrete appears to vary. Measure slump in accordance with ASTM C143.
  - f. Determine air content of the concrete sampled for each strength test in accordance with ASTM C231.
  - g. Determine temperature of concrete sampled for each strength test.
2. Submit four copies of concrete reports of each concrete class designation for slump, air content and strength tests as specified in Section 16 of ASTM C94.

O. Structural Steel

1. Contractor shall engage a qualified independent testing and inspecting agency to inspect field welds and bolted connections and to perform field tests and inspections and prepare test and inspection reports.
2. Field welds will be visually inspected according to AWS D1.1/D1.1M.
3. In addition to visual inspection, field welds will be tested according to AWS d1.1/D1.1M and the following procedures, as applicable:
  - a. Radiographic testing: ASTM E 94.
  - b. Magnetic Particle Inspection: ASTM E 709.
  - c. Ultrasonic Testing: ASTM E 164.
  - d. Liquid Penetrant Inspection: ASTM E165.
4. Bolted connections will be visually inspected.

5. High-strength, field-bolted connections will be tested and verified according to procedures in RCSC's "Specifications for Structural Joints Using ASTM A325 or ASTM A490 Bolts."
6. Correct deficiencies in Work that test and inspection reports have indicated are not in compliance with specified requirements.
7. Additional testing will be performed to determine compliance of corrected Work with specified requirements.

## PART 2 - PRODUCTS

NOT USED

## PART 3 - EXECUTION

### 3.1 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes.
- B. Protect construction exposed by or for quality control service activities, and protect repaired construction.
- C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

### 3.2 CONCRETE TESTING

- A. Sampling and testing for quality control during placement of concrete shall include the following, by the testing agency.
- B. Compression Test Specimen: ASTM C 31; one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens.
- C. Compressive Strength Tests: ASTM C 39; one set for each pour not exceeding 50 cubic yards. Of each concrete class; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
  1. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive strength by more than 500 psi.

- D. Non-Destructive Testing: Windsor Probe may be permitted but shall not be used as the sole basis for acceptance or rejection.
- E. Additional Tests: Testing laboratory may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests when unacceptable concrete is verified.

### 3.3 AGGREGATE BASE COURSE TESTING

- A. Determine maximum density and optimum moisture content for aggregate base material by ASTM D 1557, method D.
- B. Make a minimum of three field density tests on each day's final compaction on each aggregate course (AASHTO T191).
- C. Sample and test aggregate as necessary to insure compliance with specification requirements for gradation and quality.

### 3.4 GEOTECHNICAL TESTING AND INSPECTION

- A. Inspect and test undisturbed soil sub-grades prior to placement of engineered fill or concrete foundations.
- B. Inspect and test engineered fill and aggregate sub-grades prior to placement of foundation or slab-on-grade concrete.

END OF SECTION



SECTION 01500  
TEMPORARY CONSTRUCTION FACILITIES

PART 1 - GENERAL

1.1 Related document

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.
- B. Temporary Facilities: The use of the existing facilities and services, and for what time periods, are at the option of the Contractor, and does not relieve him from any responsibility for the requirements of this Section. The cost of existing utility services between turning over of the site to the Contractor and substantial completion shall be borne by the Contractor.
- C. Temporary utilities required include, but are not limited to:
  - 1. Water service and distribution.
  - 2. Temporary electric power and light.
  - 3. Telephone and data communication service.
  - 4. Storm and sanitary sewer.
- D. Temporary construction and support facilities required include, but are not limited to:
  - 1. Stormwater management systems.
  - 2. Temporary soil erosion control measures.
  - 3. Excavation sheeting, shoring and bracing.
  - 4. Temporary heat.
  - 5. Field offices and storage sheds.
  - 6. Sanitary facilities, including drinking water.
  - 7. Dewatering facilities and drains.
  - 8. Temporary enclosures.
  - 9. Temporary Project identification signs and bulletin boards.
  - 10. Waste disposal services.
  - 11. Rodent and pest control.
  - 12. Construction aids and miscellaneous services and facilities.
- E. Security and protection facilities required include, but are not limited to:
  - 1. Temporary fire protection.
  - 2. Barricades, warning signs, lights.

3. Security fence for the site.
4. Environmental protection.

### 1.3 SUBMITTALS

- A. Temporary Utilities: Submit reports of tests, inspections, meter readings and similar procedures performed on temporary utilities.
- B. Implementation and Termination Schedule: Submit a schedule indicating implementation and termination of each temporary utility within 15 days of the date established for commencement of the Work.

### 1.4 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including, but not limited to:
  1. Building Code requirements.
  2. Health and safety regulations.
  3. Utility company regulations.
  4. Police, Fire Department and Rescue Squad rules.
  5. Environmental protection regulations.
- B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities".
  1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.
  2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

### 1.5 PROJECT CONDITIONS

- A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of the permanent service.
- B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on the site. The Contractor shall maintain his temporary facilities as required, and shall remove them prior to completion of the Contract.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. General: Provide new materials; if acceptable to the Engineer, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.
- B. Lumber and Plywood: Comply with requirements in Division-6 Section "Rough Carpentry".
  - 1. For signs and directory boards, provide exterior type, Grade B-B High Density Concrete Form Overlay Plywood, conforming to PS-1, of sizes and thicknesses indicated.
- C. Paint: Comply with requirements of Division-9 Section "Finish Painting".
  - 1. For job-built temporary offices, shops, sheds, fences and other exposed lumber and plywood, provide exterior grade acrylic-latex emulsion over exterior primer.
  - 2. For sign panels and applying graphics, provide exterior grade alkyd gloss enamel over exterior primer.
  - 3. For interior walls of temporary offices, provide two coats interior latex flat wall paint.
- D. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.
- E. Water: Provide potable water approved by local health authorities.
- F. Open-Mesh Fencing: Provide 11-gage, galvanized 2-inch, chain link fabric fencing 8-feet high with galvanized steel pipe posts, 1-1/2" I.D. for line posts and 2-1/2" I.D. for corner posts.

### 2.2 EQUIPMENT

- A. General: Provide new equipment; if acceptable to the Engineer, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4" heavy-duty, abrasion-resistant, flexible rubber hoses 100 ft. long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.
- C. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets

equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.

- D. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.
- E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.
- G. Temporary Offices: Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.
- H. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material.
- I. First Aid Supplies: Comply with governing regulations.
- J. Fire Extinguishers: Provide hand-carried, portable UL-rated, Class "A" fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
  - 1. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

### 3.2 TEMPORARY UTILITY INSTALLATION



- A. General: Engage the appropriate utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the company's recommendations.
  - 1. Arrange with the company and existing users for a time when service can be interrupted, where necessary, to make connections for temporary services.
  - 2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
  - 3. Obtain easements to bring temporary utilities to the site, where the Owner's easements cannot be used for that purpose.
- B. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.
  - 1. Sterilization: Sterilize temporary water piping prior to use.
- C. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload protected disconnects, automatic ground-fault interrupters and main distribution switchgear.
  - 1. Power Distribution System: Install wiring overhead, and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, AC 20 ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.
- D. Temporary Lighting: Whenever overhead floor or roof deck has been installed, provide temporary lighting with local switching.
  - 1. Install and operate temporary lighting that will fulfill security and protection requirements, without operating the entire system, and will provide adequate illumination for construction operations and traffic conditions.
- E. Temporary Telephone and Data Service: Provide temporary telephone and data service for all personnel engaged in construction activities and requiring them, throughout the construction period. Install telephone on a separate line for each temporary office and first aid station. Where an office has more than two occupants, install a telephone for each additional occupant or pair of occupants.
  - 1. At each telephone, post a list of important telephone numbers, including local police, fire and emergency medical service.
- F. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If existing sewers cannot be used, provide drainage ditches, dry wells, and similar facilities. If neither sewers or drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off the site in a lawful manner.

1. Filter out excessive amounts of soil, construction debris, chemicals, oils and similar contaminants that might clog sewers or pollute waterways before discharge.
  2. Connect temporary sewers to the municipal system as directed by the sewer department officials.
  3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. Following heavy use, restore normal conditions promptly.
- G. Provide earthen embankments and similar barriers in and around excavations and sub-grade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.

### 3.3 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

- A. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access at locations as indicated in the construction documents or approved by the Engineer.
1. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion may be permitted to use permanent facilities, under conditions acceptable to the Owner.
- B. Provide incombustible construction for offices, shops and sheds located within the construction area, or within 30 feet of building lines. Comply with requirements of NFPA 241.
- C. Temporary Heat: Provide temporary heat required by construction activities, for curing or drying of completed installations or protection of installed construction from adverse effects of low temperatures or high humidity. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy. Temperature shall be maintained above 50 degrees F.
- D. Heating Facilities: Except where use of the permanent system is authorized, provide vented self-contained LP gas or fuel oil heaters with individual space thermostatic control.
1. Use of gasoline-burning space heaters, open flame, or salamander type heating units is prohibited.
- E. Field Offices: Provide insulated, weather-tight temporary offices of sufficient size to accommodate required office personnel at the Project site. Keep the office clean and orderly for use for small progress meetings. Furnish and equip offices as necessary to provide proper functions.
- F. Storage and Fabrication Sheds: Install storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary

utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on the site.

- G. Sanitary facilities include temporary toilets, wash facilities and drinking water fixtures. Comply with regulations and health codes for the type, number, location, operation and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.
  - 1. Provide toilet tissue, paper towels, paper cups and similar disposable materials for each facility. Provide covered waste containers for used materials.
- H. Toilets: Do not use new facilities.
- I. Provide self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
- J. Drinking Water Fixtures: Provide at least one drinking water fountain, including paper supply.
  - 1. Provide containerized tap-dispenser bottled-water type drinking water units, including paper supply, at the Contractor's option.
- K. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division-2 Sections. Where feasible, utilize the same facilities. Maintain the site, excavations and construction free of water.
- L. Temporary Enclosures: Provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.
  - 1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
  - 2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 square feet or less with plywood or similar materials.
  - 3. Close openings through floor or roof decks and horizontal surfaces with load-bearing wood-framed construction.
- M. Project Identification and Temporary Signs: Prepare project identification and other signs of the size indicated or otherwise directed by the Engineer; install signs where indicated to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservative treated wood or steel. Do not permit installation of unauthorized signs.

1. Project Identification Signs: Engage an experienced sign painter to apply graphics. Comply with details indicated.
  2. Temporary Signs: Prepare signs to provide directional information for construction personnel and visitors.
- N. Temporary Exterior Lighting: Install exterior yard and sign lights so that signs are visible when Work is being performed.
- O. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg. F. (27 deg. C.). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner. Provide Owner with certification of legal disposal.
- P. Rodent and Pest Control: Before deep foundation Work has been completed, retain a local exterminator or pest control company to recommend practices to minimize attraction and harboring of rodents, roaches and other pests. Employ this service to perform extermination and control procedures at regular intervals so the Project will be relatively free of pests and their residues at Substantial Completion. Perform control operations in a lawful manner using environmentally safe materials.

#### 3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Except for the use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer as requested by the Architect.
- B. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers", and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations".
1. Locate fire extinguishers where convenient and effective for their intended purpose.
  2. Store combustible materials in containers in fire-safe locations.
  3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
  4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
- C. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire alarm facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.

- D. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.
- E. Security Fence: Before excavation begins, install an enclosure fence with lockable entrance gates. Locate where indicated, or enclose the entire site or the portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs and other animals from easily entering the site, except by the entrance gates.
  - 1. Provide open-mesh, 8' high chain-link fencing with posts set in a compacted mixture of gravel and earth. Install lockable access gate as shown.
- F. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
  - 1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- G. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

### 3.5 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
  - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour day basis where required to achieve indicated results and to avoid possibility of damage.
  - 2. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Termination and Removal: Unless the Engineer requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed

because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves the right to take possession of Project identification signs.
2. At Substantial Completion, clean and renovate permanent facilities or areas that have been used during the construction period, including but not limited to:
  - a. Replace air filters and clean inside of ductwork and housings.
  - b. Replace significantly worn parts and parts that have been subjected to unusual operating conditions.
  - c. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

END OF SECTION

SECTION 01570  
PROJECT SIGNAGE

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

- A. Do not display signs or advertising on the premises without the approval of the Owner.

1.2 DIRECTIONAL SIGNS

- A. Provide the following signs legibly printed and weatherproof:
  - 1. Directional signs as necessary or as directed by the Engineer.
  - 2. Signs required for maintenance of traffic.

1.3 PROJECT IDENTIFICATION SIGNS

- A. Provide one Project Identification Sign.
- B. Sign outside dimensions shall be 4' by 8'. Layout specifications, colors and typefaces will be provided by the Owner.
- C. Submit shop drawings for approval showing structure, exact dimensions, copy, confirmation of specified colors and typefaces, and location on site.
- D. Maintain sign until final acceptance of the Work, and repaint sign at least once in each 12 month period.

PART 2 MATERIALS

2.1 SIGN CONSTRUCTION

- A. Fabricate sign of 3/4 -inch minimum thickness, waterproof marine plywood, and 1/4-inch hardwood edge strips with mitered corners.
- B. Include the name of the Owner, Civil Consultant, and Contractor.
- C. Mount project sign on pressure-preservative-treated wood posts 4 X 4-inch minimum, set in concrete, with 2 X 4-inch horizontal back bracing to 2 X 6-inch deadman anchors driven into soil.
- D. Paint fasteners through face of signs to match background.

PART 3 EXECUTION

3.1 SIGN ERECTION

- A. Receive approval before erection.
- B. Locate sign where shown or as directed.

END OF SECTION





SECTION 01600  
MATERIALS AND EQUIPMENT

PART 1 – GENERAL

1.1 Related document

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.
- B. The Contractor's Construction Schedule is included under Section "Submittals".
- C. Standards: Refer to Section "References" for applicability of industry standards to products specified.

1.3 DEFINITIONS

- A. Definitions used in this Section are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties", "systems", "structure", "finishes", "accessories", and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.
  - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material", "equipment", "system", and terms of similar intent.
    - a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature that is current as of the date of the Contract Documents.
  - 2. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
  - 3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.4 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.

- B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
- C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.
  - 1. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.
  - 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
    - a. Name of product and manufacturer.
    - b. Model and serial number.
    - c. Capacity.
    - d. Speed.
    - e. Ratings.

#### 1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
  - 1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
  - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
  - 3. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
  - 4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.
  - 5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
  - 6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
  - 7. Store products subject to damage by the elements above ground, under cover in a weather-tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

## PART 2 – PRODUCTS

### 2.1 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.
  - 1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
  - 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:
  - 1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted without the Architect's approval.
  - 2. Semi-proprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted without Architect's approval.
    - a. Where products or manufacturers are specified by name, accompanied by the term "or equal", or "or approved equal", comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
  - 3. Descriptive Specification Requirements: Where Specifications describe a product or assembly listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
  - 4. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.
    - a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.
  - 5. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.

6. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
  - a. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.
7. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION OF PRODUCTS

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

END OF SECTION

SECTION 01630  
PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 – GENERAL

1.1 PRODUCT OPTIONS

- A. Products are generally specified by reference standard (reference to a standard specification, method of testing, trade association standard, or other similar standard) and/or by manufacturer and product name, model number or trade name.
  - 1. When specification is by reference standard only, Contractor may select any product by any manufacturer meeting the standard.
  - 2. When only one manufacturer's product is specified, such is the basis of the Contract and shall be incorporated into the work without substitution or exception.
  - 3. When two or more manufacturers' products are specified, such is the basis of the Contract without substitution or exception.
  - 4. When one or more manufacturers' products are specified followed by the words "as approved," or words to that effect, comply with submittal and approval requirements for product substitutions.
- B. A product specified by reference standard shall comply with the requirements of the standard in effect on the date of the Bidding Documents, unless a date is specified with the standard; then the edition of the standard so dated shall govern.

1.2 PROPOSED PRODUCTS LIST AND SUBSTITUTION REQUESTS

- A. Substitution Requests: Requests for substitutions will be considered, subject to the following requirements:
  - 1. Each proposed substitution is submitted using a separate copy of Appendix 'A' – Substitution Request Form.
  - 2. Required Data: Submit complete data on the proposed substitution with drawings, including:
    - a. Product identification and description, Performance and test data, references and samples where applicable.
    - b. Include an itemized comparison of the proposed substitution with the products specified in the Contract Documents, including data relating to design, geometry, function, color selections and artistic effect, where applicable.
    - c. Changes required in other elements of the work because of the substitution.
    - d. Effect on the construction schedule.
    - e. Cost data comparing the proposed substitution with the product specified.
    - f. Any required license fees or royalties.
    - g. Availability of maintenance service, and source of replacement materials.

3. Substitutions that are proposed due to unavailability of specified products shall be accompanied by written statement from the supplier of the specified product confirming lack of availability.
- B. A request for a substitution by the Contractor means that Contractor:
1. Has investigated the proposed substitution.
  2. Has determined that the substitution is equal to or superior in quality, function and serviceability to the product specified in the Contract Documents.
  3. Will provide the same guarantee and/or warrantee(s) for the substitution that the Contractor would for the product specified in the Contract Documents.
  4. Waives all claims for additional costs that may subsequently become apparent as a result of the substitution.
  5. Will coordinate the installation of the accepted substitution in the Work, and will make such changes in the Work of the various trades as may be required to provide a complete functional system or condition.
- C. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require changes to the Contract Documents.
- D. Architect's Review of Substitution Request
1. The Architect will evaluate each substitution request and inform the Contractor in writing whether the proposed substitution is accepted, accepted as noted, or not accepted.
    - a. Substitution requests that do not conform to requirements as stipulated herein, including timing, are subject to return without review.
    - b. A substitution will not be considered accepted by the Owner until it is documented by a Change Order.
  3. The Architect's decision as to conformance and acceptability will be consistent with the intent of the Contract Documents.
  4. In the absence of written acceptance of substitution request, proposed substitutions shall be understood to be not accepted.

## PART 2 MATERIALS

NOT USED

## PART 3 EXECUTION

NOT USED

END OF SECTION

HURON-CLINTON METROPOLITAN AUTHORITY

Stony Creek Metropark

Stony Creek Landing

HCMA PROJECT NO. 509-16-532

AEW PROJECT NO. 0215-0038

SECTION 1630A  
APPENDIX "A" – SUBSTITUTION REQUEST FORM

This request to make the proposed substitution is governed by the provisions of Section 01630.

Date of substitution request: \_\_\_\_\_

☐ This Substitution Request accompanies Proposed Products List, dated \_\_\_\_\_

TO: \_\_\_\_\_ ATTN: \_\_\_\_\_

RE: \_\_\_\_\_  
Specification Section Title Sect. No. Page Paragraph

**CONTRACTOR'S PROPOSED SUBSTITUTION:** A general description of the proposed substitution:

---

---

---

---

---

☐ The accompanying attachments, per 01630, provide a full description of the proposed substitution

Proposed Changes to Contract Sum: ☐None ☐Add ☐Deduct \$ \_\_\_\_\_

Proposed Changes to Contract Time: ☐None ☐Add ☐Deduct \_\_\_\_\_ days

The proposed substitution is submitted in accordance with the provisions of Section 01630.

CONTRACTOR'S SIGNATURE:

\_\_\_\_\_  
printed name signature date

\_\_\_\_\_  
firm

**ARCHITECT'S EVALUATION:**

The proposed substitution is: ☐ Not Reviewed; ☐ Not Acceptable; ☐ Acceptable as Noted; ☐ Acceptable

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
printed name signature date

Cc: Owner; Contractor; Consultant

Note: The Owner's acceptance of a substitution requires a Change Order.

END OF FORM





SECTION 01700  
CONTRACT CLOSEOUT

PART 1 – GENERAL

1.1 Related document

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
  - 1. Inspection procedures.
  - 2. Project record document submittal.
  - 3. Operating and maintenance manual submittal.
  - 4. Submittal of warranties.
  - 5. Final cleaning.
- B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 16.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
  - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
    - a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
  - 2. Advise Owner of pending insurance change-over requirements.
  - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
  - 4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
  - 5. Deliver tools, spare parts, extra stock, and similar items.
  - 6. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.

7. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
  8. Complete final clean-up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.
- B. Inspection Procedures: On receipt of a request for inspection, the Engineer will either proceed with inspection or advise the Contractor of unfilled requirements. The Engineer will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
1. The Engineer will repeat inspection when requested and assured that the Work has been substantially completed.
  2. Results of the completed inspection will form the basis of requirements for final acceptance.

#### 1.4 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
  2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
  3. Submit a certified copy of the Architect/Aquatic Designer's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance and the list has been endorsed and dated by the Architect/Aquatic Designer.
  4. Submit final meter readings for utilities and similar data as of the date of Substantial Completion, or when the Owner took possession of and responsibility for corresponding elements of the Work.
  5. Submit consent of surety to final payment.
  6. Submit a final liquidated damages settlement statement.
  7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Re-inspection Procedure: The Engineer will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Engineer.
1. Upon completion of re-inspection, the Engineer will prepare a certificate of final acceptance or advise the Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
  2. If necessary, re-inspection will be repeated.

## 1.5 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Engineer's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
  - 1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
  - 2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
  - 3. Note related Change Order numbers where applicable.
  - 4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
- C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.
  - 1. Upon completion of the Work, submit record Specifications to the Engineer for the Owner's records.
- D. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.
  - 1. Upon completion of mark-up, submit complete set of record Product Data to the Engineer for the Owner's records.

- E. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Engineer and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.
- F. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Engineer for the Owner's records.
- G. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:
  - 1. Emergency instructions.
  - 2. Spare parts list.
  - 3. Copies of warranties.
  - 4. Wiring diagrams.
  - 5. Recommended "turn around" cycles.
  - 6. Inspection procedures.
  - 7. Shop Drawings and Product Data.
  - 8. Fixture lamping schedule.

## PART 2 – PRODUCTS

### NOT USED

## PART 3 - EXECUTION

### 3.1 CLOSEOUT PROCEDURES

- A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:
  - 1. Maintenance manuals.
  - 2. Record documents.
  - 3. Spare parts and materials.
  - 4. Tools.
  - 5. Lubricants.
  - 6. Fuels.
  - 7. Identification systems.
  - 8. Control sequences.
  - 9. Hazards.

10. Cleaning.
11. Warranties and bonds.
12. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following procedures:

1. Start-up.
2. Shutdown.
3. Emergency operations.
4. Noise balancing and vibration adjustments.
5. Safety procedures.
6. Economy and efficiency adjustments.
7. Effective energy utilization.

### 3.2 FINAL CLEANING

- A. General: General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities".
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
1. Complete the following cleaning operations before requesting inspection for Certification of Final Completion:
    - a. Remove labels that are not permanent labels.
    - b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
    - c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
    - d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
    - e. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.
- C. Pest Control: Engage an experienced exterminator to make a final inspection, and rid the Project of rodents, insects and other pests.
- D. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

- E. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.
- 1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION

SECTION 01740  
WARRANTIES

PART 1 – GENERAL

1.1 Related document

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

1.2 SUMMARY

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers' standard warranties on products and special warranties.
  - 1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
  - 2. General closeout requirements are included in Section "Contract Closeout".
- B. Disclosures and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.
- C. The General Contractor will be required to furnish a Standard Form of Labor and Material Bond, and a Standard Form of Performance Bond, each in the amount of 100% of the Contract price and running in force for a period of twelve (12) months beyond the completion of the project and the date of final payment. The General Contractor will be required to furnish a standard form of Maintenance Bond in the amount of 100% of the Contract price and running in force for a period of two (2) years beyond the completion of the project and the date of the final payment. The General Contractor will procure and pay for these bonds. Bonds shall run in favor of the Owner and shall not alter or change in any way the intent or wording of the Contract Documents.

1.3 WARRANTY REQUIREMENTS

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of

Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
  - 1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

#### 1.4 SUBMITTALS

- A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
  - 1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within fifteen days of completion of that designated portion of the Work.
- B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.
- C. Form of Submittal: At Final Completion, compile two copies of each required warranty and bond, properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the Table of Contents of the Project Manual.
- D. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
  - 1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a



- typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.
2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS", the Project title or name, and the name of the Contractor.
  3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

## PART 2 – PRODUCTS

NOT USED

## PART 3 – EXECUTION

### 3.1 SCHEDULE OF WARRANTIES

- A. Schedule: Provide warranties and bonds on products and installations as specified in the technical Specifications and as noted on the Drawings.

END OF SECTION



SECTION 01780  
RECORD DOCUMENTS

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

- A. Maintain on the Project Site, one copy of the:
  - 1. Drawings
  - 2. Specifications
  - 3. Addenda
  - 4. Approved Shop Drawings
  - 5. Change Orders and other Modifications
  - 6. Field test records
  - 7. Other documents referenced in the Contract.
- B. Such Documents shall be known as "Record Documents," and shall be marked by the Contractor to reflect an accurate and up-to-date record of actual construction of the Work as it progresses.
- C. Label each Record Document, "Record Document," in highly visible printed letters.
- D. Store the Record Documents in files or on racks as appropriate, in the field office or at other approved location, and apart from documents used for construction.
- E. Maintain the Record Documents in clean, dry, legible condition.
- F. Do not use the Record Documents for construction purposes.
- G. Make the record Documents readily available for reference by the Owner.
- H. Contractor is fully and totally responsible for the accuracy and completeness of the Record Documents.

1.2 RECORDING

- A. Record all instances where actual field construction differs from the Work as shown on the Drawings, and identify origin of change.
- B. Keep the Record Documents up-to-date concurrent with the progress of the Work. Updating shall be performed, with the concurrence of the Architect:
  - 1. Prior to concealment of Work;
  - 2. When directed by the Architect; and
  - 3. Not less than every two weeks.

1.3 RECORD DRAWINGS

- A. Make drawing changes on a set of blue line prints, from which the Contractor then transfers the information to the record drawing vellums prior to submittal.
- B. Carefully draw information and letter notes of explanation on the record drawing transparencies. If, in the Owner's opinion, the record indications are not legible or are otherwise unsatisfactory for the purpose, make new record drawings to accomplish the desired result to the satisfaction of the Owner.
- C. In the case of a Change Order issuance, replace the Record Drawing vellums with the revised vellums incorporating the Contract Modifications.
- D. Locate all moved and concealed items with reference to approved, visible horizontal and vertical reference datum.
- E. The following items are representative, but not all-inclusive, of the information which shall be recorded on the record drawings.
  - 1. Changes in depth, shape, location, or other characteristics of foundations, columns, beams, openings, concrete reinforcing, lintels, and concealed anchorages.
  - 2. Changes in plan, sections, elevations, and details, such as shifts in location of walls, doors, windows and stairs.
  - 3. Final locations and arrangement of mechanical equipment and concealed plumbing, including supply and circulating mains, vent stacks, and sanitary and storm water drainage.
  - 4. Changes made in electrical design, final arrangement of electrical circuits, light switches, and telephone and other outlets.
  - 5. Final location and arrangement of underground utilities, connections to buildings and rerouting of existing utilities, including sanitary, storm, heating, electric, signal, gas, water and telephone. Horizontal location of underground utilities shall be by dimension to established elevation at invert from permanent benchmark. Points of vertical location shall be located horizontally.

#### 1.4 RECORD SPECIFICATIONS AND ADDENDA

- A. Legibly annotate Specification sections and addenda and change order items to record manufacturer, trade name, catalog number and supplier of each product actually installed.

#### 1.5 COMPLETION

- A. Submit the Record Drawing vellums and other Record Documents to the Owner with the request for final payment. Each drawing shall be stamped "Record Drawing" or "Record Document" and a notation made on the drawing or other document certifying its completeness. Shop Drawings will not be acceptable as Record Drawings.

#### 1.6 TRANSMITTAL LETTER

A. Accompany the Record Document submittal with a transmittal letter containing:

1. Date.
2. Project title and Project Number.
3. Name of Contract.
4. Contractor's name and address.
5. Title and number of each Record Document.
6. Certification that each Record Drawing, as submitted, is complete and accurate.
7. Signature of the Contractor or the Contractor's authorized representative.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION



## **TECHNICAL SPECIFICATIONS**





April 10, 2017

SECTION 02140 - DEWATERING

PART 1 - GENERAL

DESCRIPTION:

This section specifies performance of dewatering required to lower and control ground water table levels and hydrostatic pressures to permit excavation, backfill, and construction to be performed in the dry. Control of surface water shall be considered as part of the work under this specification.

SUMMARY:

- A. The work to be completed by the Contractor includes, but is not necessarily limited to the following:
  - 1. Implementation of the Erosion and Sedimentation Control Plan.
  - 2. Dewater excavations, including seepage and precipitation.
- B. The Contractor shall be responsible for providing all materials, equipment, labor, and services necessary for care of water and erosion control. Excavation work shall not begin before the Erosion and Sedimentation Control Plan is in place.

REQUIREMENT:

- A. Dewatering system shall be of sufficient size and capacity necessary to lower and maintain ground water table to an elevation at least // 300 mm (1 foot) // below lowest foundation subgrade or bottom of pipe trench and to allow material to be excavated//, piles to be driven, and concrete placed,// in a reasonably dry condition. Materials to be removed shall be sufficiently dry to permit excavation to grades shown and to stabilize excavation

April 10, 2017

- slopes where sheeting is not required. Operate dewatering system continuously until backfill work has been completed.
- B. Reduce hydrostatic head below any excavation to the extent that water level in the construction area is a minimum of 300 mm (1 foot) below prevailing excavation surface.
  - C. Prevent loss of fines, seepage, boils, quick conditions or softening of foundation strata.
  - D. Maintain stability of sides and bottom of excavation.
  - E. Construction operations are performed in the dry.
  - F. Control of surface and subsurface water is part of dewatering requirements. Maintain adequate control so that:
    - 1. The stability of excavated and constructed slopes are not adversely affected by saturated soil, including water entering prepared subbase and subgrades where underlying materials are not free draining or are subject to swelling or freeze-thaw action.
    - 2. Erosion is controlled.
    - 3. Flooding of excavations or damage to structures does not occur.
    - 4. Surface water drains away from excavations.
    - 5. Excavations are protected from becoming wet from surface water, or insure excavations are dry before additional work is undertaken.
  - G. Permitting Requirements: The contractor shall comply with and obtain the required State and County permits where the work is performed.

SUBMITTALS:

- A. Submit in accordance with Section 01 33 00, SUBMITTALS.
- B. Drawings and Design Data:

April 10, 2017

1. Submit drawings and data showing the method to be employed in dewatering excavated areas 30 days before commencement of excavation.
2. Material shall include: location, depth and size of wellpoints, headers, sumps, ditches, size and location of discharge lines, capacities of pumps and standby units, and detailed description of dewatering methods to be employed to convey the water from site to adequate disposal.
3. Include a written report outlining control procedures to be adopted if dewatering problem arises.
4. Detailed description of dewatering procedure and maintenance method.
5. Materials submitted shall be in a format acceptable for inclusion in required permit applications to any and all regulatory agencies for which permits for discharge water from the dewatering system are required due to the discharge reaching regulated bodies of water.

## PART 2 - PRODUCTS (NOT USED)

## PART 3 - EXECUTION

### INSTALLATION:

- A. Install a dewatering system to lower and control ground surface water in order to permit excavation, construction of structure, and placement of backfill materials to be performed under dry conditions. Make the dewatering system adequate to pre-drain the water-bearing strata above and

April 10, 2017

below the bottom of structure foundations, utilities and other excavations.

- B. In addition, reduce hydrostatic pressure head in water-bearing strata below structure foundations, utility lines, and other excavations, to extent that water levels in construction area are a minimum of // 300 mm (1 foot) // below prevailing excavation surface at all times.

OPERATION:

- A. Prior to any excavation below the ground water table, place system into operation to lower water table as required and operate it continuously 24 hours a day, 7 days a week until utilities and structures have been satisfactorily constructed, which includes the placement of backfill materials and dewatering is no longer required.
- B. Place an adequate weight of backfill material to prevent buoyancy prior to discontinuing operation of the system.

WATER DISPOSAL:

- A. Dispose of water removed from the excavations in such a manner as:
1. Will not endanger portions of work under construction or completed.
  2. Will cause no inconvenience to Government or to others working near site.
  3. Will comply with the stipulations of required permits for disposal of water.
  4. Will Control Runoff: The Contractor shall be responsible for control of runoff in all work areas including but not limited to: excavations, access roads, parking areas, laydown, and staging areas. The Contractor shall

April 10, 2017

provide, operate, and maintain all ditches, basins, sumps, culverts, site grading, and pumping facilities to divert, collect, and remove all water from the work areas. All water shall be removed from the immediate work areas and shall be disposed of in accordance with applicable permits.

B. Excavation Dewatering:

1. The Contractor shall be responsible for providing all facilities required to divert, collect, control, and remove water from all construction work areas and excavations.
2. Drainage features shall have sufficient capacity to avoid flooding of work areas.
3. Drainage features shall be so arranged and altered as required to avoid degradation of the final excavated surface(s).
4. The Contractor shall utilize all necessary erosion and sediment control measures as described herein to avoid construction related degradation of the natural water quality.

C. Dewatering equipment shall be provided to remove and dispose of all surface and ground water entering excavations, trenches, or other parts of the work during construction. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the structure to be built, or the pipe to be installed therein, is completed to the extent that no damage from hydrostatic pressure, flotation, or other cause will result.

April 10, 2017

STANDBY EQUIPMENT:

Provide complete standby equipment, installed and available for immediate operation, as may be required to adequately maintain de-watering on a continuous basis and in the event that all or any part of the system may become inadequate or fail.

CORRECTIVE ACTION:

If dewatering requirements are not satisfied due to inadequacy or failure of the dewatering system (loosening of the foundation strata, or instability of slopes, or damage to foundations or structures), perform work necessary for reinstatement of foundation soil and damaged structure or damages to work in place resulting from such inadequacy or failure by Contractor, at no additional cost to Government.

DAMAGES:

Immediately repair damages to adjacent facilities caused by dewatering operations.

REMOVAL:

Insure compliance with all conditions of regulating permits and provide such information to the Resident Engineer. Obtain written approval from Resident Engineer before discontinuing operation of dewatering system.

END OF SECTION 02140

April 6, 2017

SECTION 02210 - SOIL EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1-16 Specifications Sections apply to this Section.

1.2 WORK INCLUDED

- A. Construction of erosion and sedimentation controls.
- B. Maintenance of erosion and sedimentation controls.
- C. Removal of erosion and sedimentation controls.

1.3 REGULATORY REQUIREMENTS

- A. Soil Erosion and Sedimentation Control Act 347, amended by Act 197, 1974, State of Michigan, requires that all site work be in compliance with the requirements of the Act and that a permit be obtained before starting work.
- B. Secure soil erosion and sedimentation control permit and pay all associated fees.
- C. Contractor is responsible for providing the licensed Storm Water Operator. The Contractor shall submit required Department of Environmental Quality permit, and perform all requirements of said permit.

1.4 SUBMITTALS

- A. Submit copy of soil erosion permit to Owner.
- B. Submit manufacturer product data.

April 6, 2017

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Sediment Control Fabric Fence: shall be as detailed on plans or per authority having jurisdiction.

PART 3 - EXECUTION

3.1 TIMING, MAINTENANCE, AND REMOVAL OF SOIL EROSION AND SEDIMENTATION CONTROL

- A. Construct controls prior to grubbing or grading wherever possible.
- B. Where controls cannot be constructed before work begins, temporary controls may be required between successive construction stages, as directed by the General Contractor.
- C. Time Limitations: All grading sections shall be brought to final grade immediately as grading progresses. Permanent soil erosion controls for all slopes, channels, ditches or any disturbed areas shall be completed within 15 days after completion of the grading in any area.
- D. Area Limitations: The area of excavation, borrow, embankment, or other exposed areas shall be limited commensurate to the Contractors ability to keep the finish grading, mulching, seeding and other controls current.
- E. Construction of erosion and sedimentation controls shall meet the requirements specified or as directed by the General Contractor/Engineer.
- F. Maintenance of erosion and sedimentation controls shall be done by the Contractor for temporary and permanent controls until contract completion and acceptance. Maintenance consists of repair of all damaged areas, replacements of lost facilities, and periodic removal of sediment.



HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW #0215-0038

April 6, 2017

- G. Temporary sedimentation controls shall be removed after permanent controls are in place or as directed by the General Contractor.
- H. Specific control measures and their locations shall be as shown on the drawings.
- I. In the event of any rain the Contractor shall immediately contact the Storm Water Operator for inspection and record of all erosion control measures.

END OF SECTION 02210



April 6, 2017

SECTION 02221 - BUILDING DEMOLITION

PART I GENERAL

1.01 Summary

- A. Underground utilities, pipes and services shall be properly abandoned and approved by the Engineer and utility company.
- B. The Owner shall be provide a report determining the presence of Hazardous Materials (Asbestos, Mercury, Lead, PCB's, etc). The Contractor shall be responsible for the legal removal, remediation and disposal of any and all Hazardous Materials in accordance with State and Local Laws. Equipment and materials containing Hazardous Materials shall be removed from the structure prior to structure demolition. All manpower, materials, and machines required to perform this work shall be considered incidental to the demolition of the structure.
- C. The Contractor is responsible for removing all materials to be disposed of and properly disposing materials off of the Property. The Contractor shall supply the Authority with a copy of all manifests and chain of custody documents.
- D. Contractor is responsible for all permits.

1.02 Project Conditions

- A. Dust Control: To prevent unnecessary spread of dust during performance of exterior demolition work, thoroughly moisten surfaces and debris as required to prevent dust being a nuisance to the public, neighbors and concurrent performance of other work on the site. Contractor shall be responsible for securing a supply of water in accordance with applicable regulations.

April 6, 2017

1. Sprinkling for dust shall not be required during demolition by hand methods.

## PART 2 PRODUCTS

### 2.01 Materials

- A. Materials needed or required for temporary protection in the form of barricades, fences, enclosures, etc., may be "used" construction materials of sound condition and reasonably clean. However, the condition of same materials shall meet or exceed the requirements of governing agencies and the Engineer as may be involved with the work.
- B. Equipment, machinery and apparatus, motorized or otherwise, used to perform the demolition work may be used as chosen at the Contractor's discretion, but which will perform the work within the limits of the Contract requirements.

## PART 3 EXECUTION

### 3.01 Examination

- A. Prior to performance of the actual work, the Contractor shall carefully inspect the entire site and verify with the Owner, those structures and objects designated to be demolished, removed or preserved.
- B. The Contractor shall locate existing exposed and buried utilities and determine the requirement for their protection, or their disposition with respect to the demolition work. Utilities damaged by the Contractor shall be promptly repaired by the Contractor at their expense. Repairs shall be per the utility owner's standards and approved by the utility owner and Engineer.

### 3.02 Performance

April 6, 2017

- A. The Contractor shall use signs, barricades, fencing, lighting, temporary walks, ramps, or any other appropriate means as approved by the Engineer to provide safe access to the public in areas open to the public.
- B. Conduct demolition to minimize interference with adjacent structures.
- C. Cease operations immediately if adjacent structures appear to be in danger. Notify Engineer and authority having jurisdiction; do not resume operations until directed.
- D. Conduct operations with minimum interference to public or private accesses. Maintain protected egress and access at all times.
- E. Sprinkle demolition areas with water to minimize dust. Provide hoses and water connections for this purpose.

### 3.03 Debris Removal

- A. The Contractor shall only access the site by a route approved by the Engineer.
- B. Dispose of demolition debris off Site in a lawfully approved landfill area.

### 3.04 Abandoned Equipment and Machinery

- A. Unless otherwise noted, existing equipment and machinery in or on the structures shall become the property of the Contractor (verify with owner prior to removal) and may not be disposed of on the site but shall be removed and disposed of in a lawful manner off site.

### 3.05 Concrete and Masonry Removal

April 6, 2017

- A. When removing concrete slabs, the slab must be saw-cut at the limits of removal to assure a smooth, uniform joint with new concrete installation.
- B. Removal of all masonry and concrete material must be done, while keeping the debris dampened during removal and until outside building.
- C. Unless otherwise directed, foundations and footings shall be completely removed.

### 3.06 Backfilling

- A. Place backfill material in 6-inch layers and compact each layer to 98% of the maximum unit weight of the fill material for areas under proposed load bearing areas and 95% for areas to be returned to predevelopment conditions. Load bearing area is the area within the 1:1 slope down from the outer limits of the bottom of the footing to the bottom of the excavation. All backfill shall be class II fill unless otherwise specified or approved. Soil excavated from the site may be used as backfill if approved by the Engineer.

### 3.07 Demolition Requirements

- A. Contractor shall furnish all labor, material, and equipment necessary to remove the entire designated building(s) from within the property lines of this site designated. The means and methods of performing demolition operations are the sole responsibility of the Contractor; however, equipment used, and methods of demolition shall be subject to the approval of the Engineer in addition to the directions below.
- B. Demolition by hand and demolition by machine: In general when a building is attached to another that is not being demolished, it shall be demolished by hand. Buildings that are completely detached from others not being demolished may be demolished by machine.

April 6, 2017

- C. Under hand methods, the contractor shall be restricted to horizontal operations. Unless approval to the contrary has been obtained in writing from the Authority, the demolition shall proceed from top to bottom, one floor at a time. Demolition materials shall not be permitted on sidewalks or curbs which will remain. Masonry walls shall be demolished in small sections. Walls above the elevation of the first floor shall not be "thrown", but shall be barred loose and demolished piecemeal. No windows or door frames shall be removed until the demolition work has progressed to their elevation in the walls. No swinging balls, blasting or cables shall be permitted. Only those methods of demolition which ensure all phases of the work will be strictly confined within the limits of the designated area shall be approved.
- D. Under machine methods, the Authority shall permit the use of power operated (no swinging balls) wrecking equipment. Where a group of buildings is scheduled for demolition and is attached to a structure not scheduled for demolition, power methods shall be permitted for the group except for the building immediately adjoining the structure to remain. This building shall be demolished in accordance with the hand methods above.
- E. Building(s) and attached appurtenances shall be torn down to a level of four feet below the adjacent grades unless otherwise indicated on the plans or approved by the Engineer.
- F. All steps shall be removed, except single pour steps may remain where, in the Engineer's opinion, an unsafe condition would exist, or damage to the adjacent steps would occur if the steps were removed.
- G. IN NO CASE SHALL CONTRACTOR UNDERTAKE EXCAVATION WITHOUT UNDERGROUND UTILITY PROPERTY BEING MARKED BY THE VARIOUS UTILITY COMPANIES. DEMOLITION CANNOT BEGIN ON A PROPERTY UNTIL THE CONTRACTOR HAS OBTAINED

April 6, 2017

A COPY OF A SIGNED RELEASE FROM THE RESPECTIVE UTILITIES CONFIRMING THEY HAVE BEEN DISCONNECTED FROM THE PROPERTY.

- H. The Contractor shall properly abandon all underground utilities encountered unless otherwise noted. Masonry bulkheads are required for all pipe openings to be abandoned and shall be incidental to the building demolition.
- I. Contractor shall maintain the integrity of the party walls and the front and rear walls of the adjacent property, and shall provide any and all shoring and bracing required for their support. All shoring and bracing shall be done by mechanics experienced in this type of work, and shall be installed in accordance with the rules and regulations of the Industry.
  - 1. Contractor shall close all breaches in the party walls with like materials. Breaches shall include but are not limited to door openings, passageways, open gables, etc.
  - 2. A masonry saw cut is required at the intersection of any adjacent building (including front and rear).
  - 3. When walls are saw cut, the cut is to be smooth and uniform, done in a workmanlike manner without disturbance of the remaining adjacent wall. If there is a viable reason why the walls should not be saw cut, Contractor is to submit his reasons, in writing, to the Engineer.
  - 4. Demolition site areas shall be leveled off to the adjacent grade away from any surviving party wall, walkway or street at a slope of no less than one (1) inch vertical to one (1) foot horizontal. All grading shall be limited to the perimeter of the demolished building. The demolition site shall be covered with 3" of topsoil, free of stone, branches, twigs and all foreign material in accordance with MDOT Section 816 - Turf Establishment.



April 6, 2017

J. Pedestrian and vehicle traffic shall be continuously maintained. If Contractor finds it necessary to close the walkway and/or street, approval must be granted by the Engineer prior to the start of demolition.

3.08 Permits and Licensing: Contractor shall obtain and pay for all licenses, fees and other charges required by township, city, county or state, and/or utility companies' regulations.

A. Proof of all required licenses and permit shall be submitted to the Authority.

B. The Authority will obtain and pay for a soil erosion and sedimentation control permit.

3.09 Protection

A. Exercise care during demolition work to confine demolition operations to the Site. The physical means and methods used for protection are at the Contractor's option. However, the Contractor will be completely responsible for replacement and restitution work of whatever nature at no expense to the Authority.

B. Additionally, if public safety is endangered during the progress of the demolition work, provide adequate protective measures to protect public pedestrian and vehicular traffic on streets and walkways.

C. Signs, signals and barricades used shall conform to requirements of Federal, State and local laws, rules, regulations, precautions, orders and decrees and as directed by the Engineer.

D. Explosives and Blasting: Not permitted in performance of demolition work.

END OF SECTION



HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW #0215-0038

April 6, 2017

SECTION 02230 - SITE CLEARING

PART 1 - GENERAL

RELATED DOCUMENTS

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

SUMMARY

- B. This Section includes the following:
1. Protecting existing trees and vegetation to remain.
  2. Removing trees and other vegetation.
  3. Clearing and grubbing.
  4. Topsoil stripping.
  5. Removing above-grade site improvements.
- C. Related Sections include the following:
1. Section 02300 "Earthwork" for soil materials, excavating, backfilling, and site grading.
  2. Section 02480 "Landscape Work" for finish grading, including placing and preparing topsoil for lawns and planting
  3. Section 02530 "Sanitary Sewerage."
  4. Section 02630 "Storm Drainage."
  5. Section 02665 "Water Distribution"
  6. Section 02740 "Hot Mix Asphalt Paving"
  7. Section 02751 "Cement Concrete Pavement"

DEFINITIONS

HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW #0215-0038

April 6, 2017

- D. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of weeds, roots, and other deleterious materials.

#### MATERIALS OWNERSHIP

- E. Except for materials indicated to be stockpiled or to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from the site.

#### SUBMITTALS

- F. Photographs, DVD or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.

#### PROJECT CONDITIONS

- G. Traffic: Minimize interference with adjoining roads, walks, and other adjacent occupied or used facilities during site-clearing operations.
1. Do not close or obstruct roads, walks, or other adjacent occupied or used facilities without permission from Owner.

#### PART 2 - PRODUCTS

##### SOIL MATERIALS

- A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Section 02300 "Earthwork."

#### SITE CLEARING

02230 - 2

April 6, 2017

PART 3 - EXECUTION

PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Provide erosion-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Locate and clearly flag trees and vegetation to remain.
- D. Protect existing site improvements to remain from damage during construction.
  - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

TREE PROTECTION

- E. Erect and maintain a temporary fence around drip line of individual trees or around perimeter drip line of groups of trees to remain. Remove fence when construction is complete.
  - 1. Do not store construction materials, debris, or excavated material within drip line of remaining trees.
  - 2. Do not permit vehicles, equipment, or foot traffic within drip line of remaining trees.
- F. Do not excavate within drip line of trees, unless otherwise indicated.

April 6, 2017

- G. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.

CLEARING AND GRUBBING

- H. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.

1. Do not remove trees, shrubs, and other vegetation indicated to remain.
2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
3. Completely remove stumps, roots, obstructions, and debris extending to a depth of 18 inches below exposed Subgrade, unless noted otherwise.
4. Use only hand methods for grubbing within drip line of remaining trees.

- I. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding 8-inch loose depth, and compact each layer to a density equal to adjacent original ground.

TOPSOIL STRIPPING

April 6, 2017

- J. Remove sod and grass before stripping topsoil.
- K. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
  - 1. Strip surface soil of unsuitable topsoil, including trash, debris, weeds, roots, and other waste materials.
- L. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - 1. Do not stockpile topsoil within drip line of remaining trees.

#### DISPOSAL

- M. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 02230





April 6, 2017

SECTION 02300 - EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
  - 1. Preparing subgrades for slabs-on-grade, walks, pavements, lawns, and plantings.
  - 2. Excavating and backfilling for buildings and structures.
  - 3. Proof-rolling subgrade.
  - 4. Granular fill course for slabs-on-grade.
  - 5. Base course for concrete walks and pavements.
  - 6. Excavating and backfilling trenches within building lines.
  - 7. Excavating and backfilling trenches for buried mechanical and electrical utilities and pits for buried utility structures is work of Divisions 15 and 16. This section sets forth the requirements of such work.
- B. Related Sections include the following:
  - 1. Section 02230 "Site Clearing" for site stripping, grubbing, removing topsoil, and protecting trees to remain.
  - 2. Section 02480 "Landscape Work"
  - 3. Section 02530 "Sanitary Sewerage."
  - 4. Section 02630 "Storm Drainage."
  - 5. Section 02665 "Water Distribution"
  - 6. Section 02740 "Hot Mix Asphalt Paving"
  - 7. Section 02751 "Cement Concrete Paving."
  - 8. Division 15 and 16 Sections for excavating and backfilling buried mechanical and electrical utilities and buried utility structures.

1.3 DEFINITIONS

April 6, 2017

- A. Backfill: Soil materials used to fill an excavation.
  - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
  - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Layer placed between the subgrade and asphalt or concrete paving.
- C. Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Compacted: Material at the required compaction or higher.
- F. Excavation: Removal of material encountered above subgrade elevations.
  - 1. Additional Excavation: Excavation below subgrade elevations as directed by Architect. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
  - 2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
- G. Fill: Soil materials used to raise existing grades.
- H. Maximum Density: The dry density at optimum moisture content in accordance with ASTM D1557 (Modified Proctor).
- I. Required Compaction: The ratio of in-place density to maximum density, expressed as a percentage.
- J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

April 6, 2017

- K. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- L. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

#### 1.4 SUBMITTALS

- A. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
  - 1. Classification according to ASTM D 2487 of each on-site or borrow soil material proposed for fill and backfill.
  - 2. Laboratory compaction curve according to ASTM D 1557 for each on-site or borrow soil material proposed for fill and backfill.

#### 1.5 QUALITY ASSURANCE

- A. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.
  - 1. Comply with Michigan Department of Transportation (MDOT), 2012 Standard Specifications for Construction.
- B. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

#### 1.6 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify General Contractor not less than 72 hours in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without General Contractor written permission.
  - 3. Contact MISS DIG before excavating.

April 6, 2017

## PART 2 - PRODUCTS

### 2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.
  - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Backfill and Fill: Satisfactory soil materials.
- E. Base: Naturally or artificially graded mixture of natural or crushed gravel or crushed stone complying with MDOT Table 902-1 21AA Dense Graded Aggregate.
- F. Engineered Fill: Granular soil material complying with MDOT Table 902-1, Class II Granular Material.
- G. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- H. Granular Fill: Granular soil material complying with MDOT Table 902-1, Class II Granular Material.
- I. Pea Gravel: Clean, hard, durable, free flowing, naturally rounded particles of rock, free from clay lumps, with 100% passing a 3/8" sieve and not over 5% passing a #8 sieve.

### 2.2 ACCESSORIES

April 6, 2017

- A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:
- B. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, minimum 6 inches wide and 4 mils thick, continuously inscribed with a description of utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
  - 1. Red: Electric.
  - 2. Yellow: Gas, oil, steam, and dangerous materials.
  - 3. Orange: Telephone and other communications.
  - 4. Blue: Water systems.
  - 5. Green: Sewer systems.
- C. Drainage Fabric: Nonwoven geotextile, specifically manufactured as a drainage geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:
  - 1. Grab Tensile Strength: 110 lbf; ASTM D 4632.
  - 2. Tear Strength: 40 lbf; ASTM D 4533.
  - 3. Puncture Resistance: 50 lbf; ASTM D 4833.
  - 4. Water Flow Rate: 150 gpm per sq. ft.; ASTM D 4491.
  - 5. Apparent Opening Size: No. 50; ASTM D 4751.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

April 6, 2017

- C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- D. Subgrade is prone to disturbance during construction operations. Subgrade soils may also become disturbed due to ponding water and channeled construction traffic. Disturbed subgrade soils must be properly improved prior to floor slab and pavement construction or placement of engineered fill.

### 3.2 PROOF-ROLLING

- A. After stripping of topsoil and other surface organic matter and deleterious material and before further excavation, proof-roll entire building pad area to locate overly loose or soft areas and to compact the surface.
  - 1. Subgrade resulting from topsoil and organic material removal shall be thoroughly proof-rolled with fully loaded tandem-axle dump truck or other suitable piece of pneumatic-tired construction equipment. Proof-roll a minimum of ten passes in each of perpendicular direction.
- B. Areas of unsuitable subgrade shall be dried and recompactd in-place or remove and replaced with engineered fill.
- C. Special care shall be exercised when proofrolling adjacent to the existing building to minimize disturbance to existing footings and floor slabs.
  - 1. Use light proofrolling equipment for a strip approximately ten (10) feet wide along the existing building.
- D. Prior to concrete slab placement the prepared subgrade shall again be thoroughly proof-rolled. Disturbed areas shall be recompactd or removed and replaced with engineered fill.
- E. Proof-rolling operations must be done in presence of Testing Agency.

April 6, 2017

### 3.3 DEWATERING

- A. Subgrade soils are prone to disturbance due to ponded water.
- B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
  - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
  - 2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

### 3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavation to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.
  - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

### 3.5 EXCAVATION FOR STRUCTURES

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

April 6, 2017

indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended for bearing surface.

### 3.6 EXCAVATION FOR WALKS AND PAVEMENTS

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

### 3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
  - 1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
  - 1. Clearance: As indicated.
- C. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe elevation to allow for bedding course. Hand excavate for bell of pipe.

### 3.8 EXCAVATION FOR SWALES

- A. A. Excavate swales to indicated gradients, lines, depths and elevations.
  - 1. Side slope of swales not to exceed 6:1.

### 3.9 APPROVAL OF SUBGRADE

- A. Notify Architect when excavations have reached required subgrade.
- B. If Architect determines based on Testing Agency's recommendation that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.



April 6, 2017

1. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect.

### 3.10 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Architect.

1. Fill unauthorized excavations under other construction or utility pipe as directed by Architect.

### 3.11 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

### 3.12 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including but not limited to perimeter insulation.
2. Surveying locations of underground utilities for record documents.
3. Inspecting and testing underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring and bracing, and sheeting.

April 6, 2017

### 3.13 UTILITY TRENCH BACKFILL

- A. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- B. Backfill trenches excavated under footings and within 18 inches of bottom of footings; fill with concrete to elevation of bottom of footings.
- C. Place and compact initial backfill of base course material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit.
  - 1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
- D. Coordinate backfilling with utilities testing.
- E. Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.
- F. Place and compact final backfill of satisfactory soil material to final subgrade.
- G. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

### 3.14 FILL

- A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.

April 6, 2017

- B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- C. Place and compact fill material in layers to required elevations as follows:
  - 1. Under grass and planted areas, use satisfactory soil material.
  - 2. Under walks and pavements, use granular fill or approved engineered fill as indicated on drawings.
  - 3. Under steps and ramps, use approved engineered fill.
  - 4. Under building slabs, use approved engineered fill.
  - 5. Under footings and foundations, use approved engineered fill.

### 3.15 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
  - 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
  - 2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

### 3.16 COMPACTION OF BACKFILLS AND FILLS

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:

April 6, 2017

1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill material at 95 percent.
2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 92 percent.
3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 85 percent.

### 3.17 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
  1. In general, the areas within the limits of buildings shall be rough graded to elevations 4" below bottom of slabs, filled with granular material as specified and finish graded to elevations at bottom of slabs.
  2. Provide a smooth transition between adjacent existing grades and new grades.
  3. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
  1. Lawn or Unpaved Areas: Plus or minus 1 inch.
  2. Walks: Plus or minus 1 inch.
  3. Pavements: Plus or minus 1/2 inch.
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

### 3.18 BASE COURSES

- A. Under pavements and walks, place base course on prepared subgrade and as follows:
  1. Compact base courses at optimum moisture content to required grades, lines, cross sections, and thickness to

April 6, 2017

not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

2. Shape base to required crown elevations and cross-slope grades.
3. When thickness of compacted base course is 6 inches or less, place materials in a single layer.
4. When thickness of compacted base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

### 3.19 GRANULAR FILL COURSE

- A. Under slabs-on-grade, place granular fill course on prepared subgrade and as follows:
  1. Compact granular fill course to required cross sections and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.
  2. When compacted thickness of drainage course is 6 inches or less, place materials in a single layer.
  3. When compacted thickness of drainage course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

### 3.20 AGGREGATE FILL COURSE

- A. In areas below concrete or hot-mix asphalt pavements, place 21AA crushed limestone aggregate fill course on prepared subgrade and as follows:
  1. Compact aggregate fill course to required thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.
  2. Place materials equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

### 3.21 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.

April 6, 2017

- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Footing Subgrade: At strip footing subgrades, at least one test each 10 feet o.c of each soil stratum will be performed to verify design bearing capacities.
- D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
  - 1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 1000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.
  - 2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 25 feet or less of wall length, but no fewer than two tests.
  - 3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 50 feet or less of trench length, but no fewer than two tests.
- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

### 3.22 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
  - 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

April 6, 2017

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

### 3.23 DISPOSAL OF SURPLUS AND WASTE MATERIALS

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

END OF SECTION 02300





HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW #0215-0038

April 6, 2017

SECTION 02480 - LANDSCAPE WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

- A. The extent of the landscape development work is shown on the drawings and in schedules.
- B. Sub-grade Elevations: Elevation, filling and grading required to establish elevations shown on the drawings are not specified in this Section. Refer to Section 02300, Earthwork.

1.03 QUALITY ASSURANCE:

- A. Subcontract the landscape work to a single firm specializing in landscape work.
- B. Source Quality Control:
  - 1. General: Ship landscape materials with certificates of inspection as required by governmental authorities. Comply with governing regulations applicable to landscape materials.
  - 2. Do not make substitutions. If specified landscape material is not obtainable, submit to Architect proof of non-availability and proposal for use of equivalent material. When authorized, adjustment of contract amount will be made.
  - 3. Analysis and Standards: Package standard products with manufacturer's certified analysis. For other materials,

April 6, 2017

provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agricultural Chemists, wherever applicable or as further specified.

4. Trees: Provide trees grown in a recognized nursery in accordance with good horticultural practice. Provide healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, or disfigurement.

- a. Sizes: Provide trees of the sizes shown or specified. Trees of larger size may be used if acceptable to the Architect, and if sizes of roots or balls are increased proportionately.

5. Inspection: Architect reserves the right to inspect trees either at place of growth, or at site before planting for compliance with requirements for names, variety, size, and quality.

1.04 SUBMITTALS:

A. Certification:

1. Submit two (2) copies of certificates of inspection as required by governmental authorities, and manufacturer's or vendors certified analysis for soil amendments and fertilizer materials. Submit other data substantiating that materials comply with specified requirements.

B. Planting Schedule:

1. Submit three (3) copies of planting schedule showing scheduled dates for each type of planting in each area of site.

C. Maintenance Instructions:

1. Submit two (2) copies of typewritten instructions

April 6, 2017

recommending procedures to be established by the Owner for the maintenance of landscape work for one (1) full year. Submit prior to expiration of required maintenance period(s).

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Packaged Materials:

1. Deliver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and while stored at the site.

B. Plant Materials:

1. Sod: Time delivery so that sod will be placed within 24 hours after stripping. Protect sod against drying and breaking of rolled strips.
2. Trees: Provide freshly dug trees. Do not use trees which have been in cold storage or heeled-in. Do not prune prior to delivery. Do not bend or bind-tie trees in such manner as to damage bark, break branches, or destroy natural shape. Provide protective covering during delivery.
3. Dig Balled and Burlapped (BB) plants with firm, natural balls of earth of diameter not less than that specified, and of sufficient depth to include all the fibrous feeding roots. No plant moved with a ball will be accepted if the ball is cracked or broken before or during planting operations, except on special approval.
4. Deliver trees after preparations for planting have been completed and plant immediately. If planting is delayed more than six (6) hours after delivery, set trees in shade, protect from weather and mechanical damage, and keep roots moist.

April 6, 2017

5. Do not remove container grown stock from containers until planting time.
6. Label at least one (1) tree of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.

1.06 JOB CONDITIONS:

- A. Proceed with and complete the landscape work as rapidly as seasonal limitations for each kind of landscape work required.
- B. Utilities: Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate, as required, to minimize possibility of damage to underground utilities. Maintain grade stakes set by others until removal is mutually agreed upon by all parties concerned.
- C. Excavation: When conditions detrimental to plant growth are encountered such as rubble fill, adverse drainage conditions, or obstructions, notify Architect before planting.
- D. Planting Schedules: Prepare a proposed planting schedule. Schedule the dates for each type of landscape work during the normal seasons for such work in the area of the site. Correlate with specified maintenance periods to provide maintenance until occupancy by the Owner. Once accepted, revise dates only as approved in writing, after documentation of reasons for delays.
- E. Coordination with Lawns: Plant trees after final grades are established and prior to planting of lawns, unless otherwise acceptable to the Architect. If planting of trees occurs after lawn work, protect lawn areas and promptly repair damage to lawns resulting from planting operations.

1.07 WARRANTY:

LANDSCAPE WORK

02480 - 4

April 6, 2017

- A. Warranty lawns through the specified maintenance period, and until final acceptance.
- B. Warranty trees for a period of one (1) year after date of acceptance against defects, including death and unsatisfactory growth, except for defects resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents which are beyond Landscape Installer's control.
- C. Remove and replace trees or other plants found to be dead or in unhealthy condition during warranty period. Plant missing trees and plants. Make replacements during growth season following end of warranty period. Furnish and plant replacements which comply with requirements shown and specified. Also, replace trees which are in doubtful condition at end of warranty period; unless, in the opinion of the Architect, it is advisable to extend warranty period for a full-growing season. The Architect will make another inspection at the end of extended warranty period, if any, to determine acceptance or rejection. Only one replacement will be required at end of warranty period, except for losses or replacement due to failure to comply with specified requirements.

## PART 2 - PRODUCTS

### 2.01 TOPSOIL:

- A. Provide new topsoil which is fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, brush, weeds, and other litter, and free of roots, stumps, stones larger than 2" in any dimension, and other extraneous or toxic matter harmful to plant growth.

- 1. Provide all new topsoil; do not use any on site.

### 2.02 SOIL AMENDMENTS:

April 6, 2017

- A. Lime: Natural limestone containing not less than 85% of total carbonates, ground so that not less than 90% passes a 10-mesh sieve, and not less than 50% passes a 100-mesh sieve.
- B. Peat Humus: FS Q-P-166 and with the texture and ph range suitable for the intended use.
- C. Bonemeal: Commercial, raw, finely ground, 4% nitrogen and 20% phosphoric acid.
- D. Superphosphate: Soluble mixture of treated minerals; 20% available phosphoric acid.
- E. Commercial Fertilizer: Complete fertilizer of neutral character with some elements derived from organic sources and containing the following percentages of available plant nutrients:
  - 1. For trees, provide fertilizer with not less than 10% available phosphoric acid and from 3% to 5% total nitrogen, and from 3% to 5% soluble potash.
  - 2. For lawns, provide fertilizer with not less than 4% phosphoric acid and not less than 2% potassium, and the percentage of nitrogen required to provide not less than 1 lb. of actual nitrogen per 1000 sq.ft. of lawn area. Provide nitrogen in a form that will be available to the lawn during the initial period of growth.

2.03 PLANT MATERIALS:

- A. Name and Variety: Provide plant materials true to name and variety established by the American Joint Committee on Horticultural Nomenclature "Standardized Plant Names" Second Edition, 1942. Substitutions or indigenous local specie may be proposed if still deciduous or evergreen as required. Substitutions must be same size or larger. Comply with all other requirements acceptable to the Architect.
- B. Quality: Provide trees and other plants complying with the recommendations and requirements of ANSI 760; "Standard for

April 6, 2017

Nursery Stock" and as further specified.

C. Measurements: Measure all trees when their branches are in normal position. Height and spread dimensions indicated refer to the main body of the plant, not from branch or root tip to tip. Determine caliper as follows:

1. For 4" and smaller, measure diameter of trunk 6" above grade.
2. For larger than 4", measure diameter of trunk 12" above grade.

D. Do not cut leaders or otherwise damage by unnecessary cutting.

E. Deciduous Trees: Provide trees of height and caliper listed or shown and with branching configuration recommended by ANSI Z60.1 for type and species required. Provide single stem trees except where special forms are shown or listed. Ball and burlap (BB) deciduous trees.

2.04 GRASS MATERIALS:

A. Sod: Provide strongly rooted sod not less than two (2) years old and free of weeds and undesirable native grasses. Provide only sod capable of growth and development when planted (viable, not dormant) and in strips not more than 18" long. Provide sod composed principally of Kentucky Bluegrass (*Poa Pratensis*) or its equivalent, as acceptable to the Architect.

2.05 SEED:

A. Seed shall be a mixture composed of the following:

Seeding shall be specified as one of these two mixtures:

Improved Kentucky Bluegrass Mixture

April 6, 2017

Touchdown Kentucky  
Bluegrass 6#/1000 Sq. Ft.

Barron Kentucky  
Bluegrass 6#/1000 Sq. Ft.

Grass shall be fresh, new crop seed. The Contractor shall furnish the Owner the dealer's guaranteed statement of the composition of the mixture and the percentages of purity and germination and a copy of the State Certification for the seed.

B. Hydro-Seed Option:

The Contractor is advised that he may use hydro-seeding or hydro-mulching operations in lieu of mechanical seeding if he so desires.

2.06 MISCELLANEOUS LANDSCAPE MATERIALS:

- A. Anti-Desiccant: Emulsion type, film-forming agent similar to Dowax by Dow Chemical Co. or Wilt-Prof by Nursery Specialty Products, Inc., designed to permit transpiration but retard excessive loss of moisture from plants. Deliver in manufacturer's fully identified containers and mix in accordance with manufacturer's instructions.
- B. Wrapping: Tree-wrap tape not less than 4" wide, designed to prevent bore damage and winter freezing fabricated from bituminous lined two-ply paper.
- C. Stakes and Guys: Provide stakes and deadmen of sound new hardwood, treated softwood, or redwood, free of knot holes and other defects. Provide wire ties and guys of 2-strand, twisted, pliable galvanized iron wire not lighter than 12 USWG with zinc-coated turnbuckles. Provide net 2-ply fabric black rubber hose not less than 1/2" hose size, cut to required lengths to protect tree trunks from damage by wires.
- D. Plastic Sheet: Black, weather resistant polyethylene sheeting complying with FS L-P-512, Type III, 0.008" (6 mils)



April 6, 2017

thick.

- E. Mulch: For uses other than with hydro-seeding, operations shall be hay or straw, not chopped in short lengths. Mulch used with hydro-seeding operations shall be a wood cellulose fiber containing no growth or germination inhibiting factors. Rate of application for wood cellulose fiber mulch in hydro-seeding operations shall be 1500 pounds per acre, or 35 pounds per 1000 square feet.

2.07 PREPARATION OF PLANTING SOIL:

- A. Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful or toxic to plant growth.
- B. Mix specified soil amendments and fertilizers with topsoil as provided herein. Delay mixing of fertilizer if planting will not follow placing of planting soil within a few days. Prepare mix on site using four parts topsoil to one part peat, and add 5 lbs. super phosphate to each cubic yard. Completely mix mechanically and add fertilizer as directed by the Architect.
- C. For pit type back fill, mix planting soil prior to back filling and stockpile at the site.
- D. For planting beds, mix planting soil either prior to planting or apply on surface of topsoil and mix thoroughly before planting.
  - 1. Mix lime with dry soil prior to mixing of fertilizer.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Installer must examine the subgrade, verify the elevations, observe the conditions under which work is to be performed, and notify the Contractor of unsatisfactory conditions. Do

April 6, 2017

not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.02 PREPARATION:

A. Layout individual tree locations and areas for multiple plantings. Stake locations and outline areas and secure Architect's acceptance before start of planting work. Make minor adjustments as may be requested.

B. Preparation for Planting Lawns:

1. Loosen subgrade of lawn areas to minimum depth of 4". Remove stones over 1-1/2" in any dimension, and sticks, roots, rubbish, and other extraneous matter. Limit preparation to areas which will be planted promptly after preparation.
2. Spread topsoil to minimum depth required to meet lines, grades, and elevations shown, but not less than 3" after light rolling and natural settlement.
3. Place approximately 1/2 of total amount of topsoil required. Work into top of loosened subgrade to create a transition layer and then place remainder of topsoil.
4. Allow for sod thickness in areas to be sodded.
5. Grade lawn areas to smooth, even surface with loose, uniformly fine texture. Roll and rake and remove ridges and fill depressions as required to meet finish grades. Limit fine grading to areas which can be planted immediately after grading.
6. Apply fertilizer by mechanical spreading at a rate of not less than 20 lbs. per 1,000 sq. ft.. Blend with top 1" of soil.
7. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface moisture to dry before planting lawns. Do not create a muddy soil

April 6, 2017

condition.

8. Restore lawn areas to specified condition if eroded or otherwise disturbed after fine grading and prior to planting.
9. Preparation of Unchanged Grades: Where lawns are to be planted in areas that have not been altered or disturbed by excavating, grading, or stripping operations, prepare soil for lawn planting as follows:

Till to a depth of not less than 6"; apply soil amendments and initial fertilizers as specified; remove high areas and fill in depressions; till soil to a homogenous mixture of fine texture, free of lumps, clods, stones, roots, and other extraneous matter.

- a. Prior to preparation of unchanged areas, remove existing grass, vegetation and turf. Dispose of such material outside of Owner's property; do not turn over into soil being prepared for lawns.

C. Preparation of Planting Beds:

1. Loosen subgrade of planting bed areas to a minimum depth of 6" using a cultimulcher or similar equipment. Remove stones over 1-1/2" in any dimension, and sticks, stones, rubbish, and other extraneous matter.
2. Spread planting soil mixture to minimum depth required to meet lines, grades and elevations shown after light rolling and natural settlement. Place approximately 1/2 of total amount of planting soil required. Work into top of loosened subgrade to create a transition layer, then place remainder of the planting soil.

D. Excavation for Trees:

1. Excavate pits, beds and trenches with vertical sides and with bottom of excavation slightly raised at center to

April 6, 2017

provide proper drainage. Loosen hard subsoil in bottom of excavation.

2. For balled and burlapped, (BB) trees, make excavations at least twice as wide as the ball diameter and equal to the ball depth, plus the following allowance for setting of ball on a layer of compacted back fill. Allow for 4" setting layer of planting soil mixture.
3. Dispose of subsoil removed from landscape excavations. Do not mix with planting soil or use as back fill.
4. Fill excavations for trees with water and allow to percolate out before planting.

### 3.03 PLANTING:

#### A. Planting Trees:

1. Set balled and burlapped (BB) stock on layer of compacted planting soil mixture, plumb and in center of pit or trench with top of ball at same elevation as adjacent finished landscape grades. Remove burlap from sides of balls; retain on bottoms. When set, place additional soil mixture back fill around base and sides of ball, and work each layer to settle back fill and eliminate voids and air pockets. When excavation is approximately 2/3 full, water thoroughly before placing remainder of back fill. Repeat watering until no more is absorbed. Water again after placing final layer of back fill.
2. Dish top of back fill to allow for mulching.
  - a. For spring planting, provide additional back fill berm around edge of excavations to form shallow saucer to collect water.
3. Mulch pits, trenches, and planted areas. Provide not less than 4" and finish level with adjacent finish grades using shredded bark.

April 6, 2017

4. Apply anti-desiccant using power spray to provide an adequate film over trunks, branches, stems, twigs, and foliage.
  - a. If deciduous trees are moved in full-leaf, spray with anti desiccant at nursery before moving and again two (2) weeks after planting.
5. Prune, thin out and shape trees in accordance with standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise directed by the Architect, do not cut tree leaders, and remove only injured or dead branches from flowering trees, if any.
6. Remove and replace excessively pruned or misformed stock resulting from improper pruning.
7. Paint cuts over 1/2" in size with standard tree paint or compound covering exposed, living tissue. Use paint which is waterproof, antiseptic, adhesive, elastic, and free of kerosene, coal tar, creosote, and other substances harmful to plants. Do not use shellac.
8. Wrap trunks of all deciduous trees taller than 8'. Start at ground and cover trunk to height of second limbs and secure at every second wrap.
9. Inspect tree trunks for injury, improper pruning, and insect infestation, and take corrective measures required before wrapping.
10. Guy and stake trees immediately after planting as follows:
  - a. Guy three (3) ways securing wire to 2" x 4" x 30" stakes set two (2) feet in the ground.

B. Sodding New Lawns:

April 6, 2017

1. Lay sod within 24 hours from time of stripping. Do not plant dormant sod or if ground is frozen.
2. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod strips; do not overlap. Stagger strips to offset joints in adjacent courses. Work from boards to avoid damage to subgrade or sod. Tamp or roll lightly to ensure contact with subgrade. Work sifted soil into minor cracks between pieces of sod; remove excess to avoid smothering of adjacent grass.
3. Secure sod on slopes with wood pegs to prevent slippage.
4. Water sod thoroughly with a finespray immediately after planting.

C. Mechanical Seeding:

1. Seeding: The Contractor shall seed all areas with grass seed as specified, sowing evenly with an approved mechanical seeder at the rate specified in 2.05A. Sow one-half the seed in one direction and the other half at right angles to the first seeding. To cover the seed and firm the soil, the seed bed shall then be lightly rolled with a cultipacker. In areas inaccessible to the cultipacker, the seeded ground shall be lightly raked and rolled in two directions with water ballast roller. Extreme care shall be taken during seeking and raking to insure that no change shall occur in the finished grades and that the seed is not raked from one spot to another. If the areas are seeded by a large mechanical seeder which works the seed into the soil and at the same time rolls the seed bed, it is not necessary to roll the seed bed separately.
2. Mulching: After sowing, mulch shall be spread evenly at the rate of 2 tons per acre over newly seeded areas. The mulch shall be applied in a uniform layer, loose enough to allow sunlight to penetrate and air to circulate, yet sufficient to shade the soil and reduce

April 6, 2017

erosion. The mulch shall be held in place by crimping, cultipacking, spraying with asphalt emulsion, or any other means satisfactory with the Owner.

D. Hydraulic Seeding (Contractors option):

1. The Contractor shall seed with hydraulic seeding equipment, using fertilizer and mulch of the type and at the rate previously specified. Slurry shall be distributed uniformly over the area at the designated application rate. areas inaccessible to such equipment may be fertilized and seeded by hand.

3.04 MISCELLANEOUS LANDSCAPE WORK:

- A. Place wood chip mulch beds where shown. Compact soil sub grades and lay 6 mil carbonated polyethylene film over compacted subgrade prior to placing mulch.

3.05 MAINTENANCE:

- A. Begin maintenance immediately after planting.
- B. Maintain trees and other plants until final acceptance, but in no case less than 30 days after planting.
- C. Maintain trees and other plants by pruning, cultivating, and weeding as required for healthy growth. Restore planting saucers. Tighten and repair stake and guy supports, and reset trees to proper grades or vertical position as required. Restore or replace damaged wrapping. Spray as required to keep trees free of insects and disease. Feed trees as specified and as may be required.

D. Feeding Program:

1. Feed all trees at least one time prior to final acceptance. Schedule feeding as follows:

- a. For Spring and early Summer planting, feed shortly

April 6, 2017

after installation.

b. For late Summer and Fall planting, feed the following Spring.

2. Rake back mulch, apply fertilizer, and replace mulch. Fertilize with 10-6-4 analysis fertilizer, applying uniformly over cultivated ground area surrounding each plant. Apply fertilizer at the following rates:

a. Shade trees - 2 lbs. per inch or caliper.

b. Small trees - 1 lb. per inch of caliper.

E. Maintain lawns as indicated in Section 02499 ``Landscape Maintenance and Warranty Standards``.

1. Maintain lawns by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading and replanting as required to establish a smooth, acceptable lawn free of eroded or bare areas.

### 3.06 CLEAN UP AND PROTECTION:

A. During landscape work, store materials and equipment where directed. Keep pavements clean and work area in an orderly condition.

B. Protect landscape work and materials from damage due to landscape operations, operations by other contractors, trades and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed.

### 3.07 INSPECTION AND ACCEPTANCE:

A. When the landscape work is completed including maintenance, the Architect will, upon request, make an inspection to determine acceptability.



HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW #0215-0038

April 6, 2017

- B. Where inspected landscape work does not comply with the requirements, replace rejected work and continue specified maintenance until reinspected by the Architect and found to be acceptable. Remove rejected plants and materials promptly from the project site.

END OF SECTION 02480



April 6, 2017

SECTION 02499 - LANDSCAPE MAINTENANCE AND WARRANTY STANDARDS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Attention is directed to Bidding and Contract Requirements, and to General and Supplemental Conditions, hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

- A. The requirements of this Section include a one year warranty period from date of acceptance of installation.
- B. Related Work Specified Elsewhere:
  - 1. Section 02480: Landscape Work

1.03 ACCEPTANCE OF INSTALLATION:

- A. At the completion of all landscape installation, or pre-approved portions thereof, the Contractor shall request in writing an inspection for acceptance of installation in which the Contractor, Landscape Architect and Owner's Representative shall be present. After this inspection a "Punch List" will be issued by the Landscape Architect and/or Owner's Representative shall re-inspect the project and issue a written statement of acceptance of installation and establish the beginning of the project warranty period.
- B. Landscape work may be inspected for acceptance in parts agreeable to Owner's Representative and Landscape Architect provided work offered for inspection is complete, including maintenance as required.

April 6, 2017

- C. For work to be inspected for partial acceptance, Contractor shall provide a drawing outlining work completed, and supply a written statement requesting acceptance of this work completed to date.

1.04 PROJECT WARRANTY:

- A. The project warranty period begins upon written acceptance of the project installation by Landscape Architect and Owner's Representative.
- B. The Contractor shall guarantee seeded areas through construction and for a period of one year after date of acceptance of installation against defects including death and unsatisfactory growth, except for defects resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents which are beyond Contractor's control.

1.05 MAINTENANCE:

- A. To insure guarantee standards, the following maintenance procedures shall be executed during construction and for the full project warranty period.
- B. Maintenance of Seeded Lawn Areas:
  - 1. The Contractor shall establish a dense lawn of permanent grasses, free from lumps and depressions or any bare spots, none of which is larger than one foot of area up to a maximum of 3% of the total seeded lawn area. Any part of the seeded lawn that fails to show a uniform growth and/or germination shall be reseeded until a dense cover is established.
  - 2. If seeded in fall or if not considered acceptable at that time, continue maintenance the following spring until acceptable lawn is established.
  - 3. The Contractor shall provide a minimum of two cuttings of the lawn or more as necessary until the inspection and acceptance of installation by the Owner's

April 6, 2017

Representative and Landscape Architect. When the lawn reaches 3 inches in height it shall be cut to 2 inches in height. When meadow lawn reaches 6" in height it shall be cut to 4" in height.

4. The Owner assumes cutting responsibilities following the acceptance of installation by the Owner's Representative and the Landscape Architect.
5. After acceptance of installation, and for the duration of the project warranty period the Contractor shall continue all other maintenance procedures including fertilizing and weeding, and other operations such as rolling, regrading, replanting, and applying herbicides, fungicides, insecticides as required to establish a smooth, acceptable lawn free of eroded or bare areas.
6. Repair, rework, and reseed all areas that have washed out, and eroded, or do not substantially germinate.
7. At conclusion of project warranty period and after receiving written final acceptance by Owner's Representative and Landscape Architect, the Owner shall assume all seeded lawn maintenance responsibilities.

1.06 FINAL ACCEPTANCE:

- A. At the conclusion of the project warranty period the Contractor shall request a project inspection for final acceptance in which the Contractor, Landscape Architect and Owner's Representative shall be present. After this inspection a "Punch List" will be issued by the Landscape Architect. Upon completion of all punch list items, the Landscape Architect and Owner's Representative shall reinspect the project and issue a written statement of final acceptance. Upon final acceptance the Owner assumes all maintenance responsibilities for the landscape of the project.

PART 2 AND 3 - PRODUCTS AND EXECUTION

Not Applicable.

END OF SECTION 02499



April 6, 2017

SECTION 02530 - SANITARY SEWERAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes sanitary sewerage outside the building.
- B. Related Sections include the following:
  - 1. Section 02300 "Earthwork."
  - 2. Section 02630 "Storm Drainage."

1.3 DEFINITIONS

- A. PVC: Polyvinyl chloride plastic.

1.4 PERFORMANCE REQUIREMENTS

- A. Gravity-Flow, Nonpressure-Piping Pressure Ratings: At least equal to system test pressure.

1.5 SUBMITTALS

- A. Shop Drawings: Include plans, elevations, details, and attachments for the following:
  - 1. Precast concrete manholes, including frames and covers.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not store plastic pipe, and fittings in direct sunlight.

April 6, 2017

- B. Protect pipe, pipe fittings, and seals from dirt and damage.
- C. Handle precast concrete manholes and other structures according to manufacturer's written rigging instructions.

#### 1.7 PROJECT CONDITIONS

- A. Site Information: Perform site survey, research public utility records, and verify existing utility locations.
- B. Locate existing structures and piping to be closed and abandoned.
- C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify the Owner not less than 72 hours in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without the Owner's written permission.

### PART 2 - PRODUCTS

#### 2.1 PIPES AND FITTINGS

- A. PVC Sewer Pipe and Fittings: According to the following:
  - 1. PVC Sewer Pipe and Fittings: ASTM D 3034, Schedule 40, for solvent-cemented or gasketed joints.
    - a. Primer: ASTM F 656.
    - b. Solvent Cement: ASTM D 2564.
    - c. Gaskets: ASTM F 477, elastomeric seals.

#### 2.2 MANHOLES

- A. Normal-Traffic Precast Concrete Manholes: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for rubber gasketed joints.



April 6, 2017

1. Diameter: 48 inches minimum, unless otherwise indicated.
  2. Ballast: Increase thickness of precast concrete sections or add concrete to base section, as required to prevent flotation.
  3. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and having separate base slab or base section with integral floor.
  4. Riser Sections: 4-inch minimum thickness, and lengths to provide depth indicated.
  5. Top Section: Eccentric-cone type, unless concentric-cone or flat-slab-top type is indicated. Top of cone of size that matches grade rings.
  6. Gaskets: ASTM C 443, rubber.
  7. Grade Rings: Include two or three reinforced-concrete rings, of 6- to 9-inch total thickness, that match 24-inch- diameter frame and cover.
  8. Steps: Manufactured from deformed, 3/8-inch minimum steel reinforcement rod complying with ASTM A 615 and encased in polypropylene complying with ASTM D 2416 "Propylene Plastic Molding and Extrusion Materials". Steps shall comply with local utility company standards.
- B. Manhole Frames and Covers: ASTM A 536, Grade 60-40-18, ductile-iron castings designed for heavy-duty service. Include 24-inch ID by 7- to 9-inch riser with 4-inch minimum width flange, and 26-inch- diameter cover. Include indented top design with lettering as indicated on local municipalities standard plans. Provide type and model of casting as indicated on Shelby Township standard plans.

## 2.3 CONCRETE

- A. General: Cast-in-place concrete according to ACI 318, ACI 350R, and the following:
1. Cement: ASTM C 150, Type II.
  2. Fine Aggregate: ASTM C 33, sand.
  3. Coarse Aggregate: ASTM C 33, crushed gravel.
  4. Water: Potable.

April 6, 2017

- B. Structures; Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water-cementitious materials ratio.
  - 1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.
  - 2. Reinforcement Bars: ASTM A 615, Grade 60, deformed steel.
- C. Structure Channels and Benches: Factory or field formed from concrete. Portland cement design mix, 4000 psi minimum, with 0.45 maximum water-cementitious materials ratio. Include channels and benches in manholes.
  - 1. Manhole Channels: Concrete invert, formed to same width as connected piping, with height of vertical sides to three-fourths of pipe diameter. Form curved channels with smooth, uniform radius and slope.
    - a. Invert Slope: 1 percent through manhole.
  - 2. Manhole Benches: Concrete, sloped to drain into channel.
    - a. Slope: 8 percent.

## 2.4 CLEANOUTS

- A. PVC Cleanouts: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping unless noted otherwise on plans.

## PART 3 - EXECUTION

### 3.1 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Section 02300 "Earthwork" and with requirements of local municipalities.

### 3.2 IDENTIFICATION

April 6, 2017

- A. Materials and their installation are specified in Division 2 Section "Earthwork." Arrange for installing green warning tapes directly over piping and at outside edges of underground structures.
  - 1. Use warning tape or detectable warning tape over ferrous piping.
  - 2. Use detectable warning tape over nonferrous piping and over edges of underground structures.

### 3.3 PIPING APPLICATIONS

- A. General: Include watertight joints.
- B. Refer to Part 2 of this Section for detailed specifications for pipe and fitting products listed below. Use pipe, fittings, and joining methods according to applications indicated.
- C. Gravity-Flow Piping: Use the following:
  - 1. NPS 4 and NPS 8: PVC sewer pipe and fittings, solvent-cemented joints, or gaskets and gasketed joints.

### 3.4 INSTALLATION, GENERAL

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground sanitary sewerage piping. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for using lubricants, cements, and other installation requirements. Maintain swab or drag in line, and pull past each joint as it is completed.

April 6, 2017

- C. Use manholes for changes in direction, unless fittings are indicated. Use fittings for branch connections, unless direct tap into existing sewer is indicated.
- D. Use proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- E. Install gravity-flow system piping at constant slope between points and elevations indicated.
  - 1. Install straight piping runs at constant slope, not less than that specified, where slopes are not indicated.

### 3.5 PIPE JOINT CONSTRUCTION AND INSTALLATION

- A. General: Join and install pipe and fittings according to installations indicated.
- B. PVC Sewer Pipe and Fittings: As follows:
  - 1. Join pipe and gasketed fittings with elastomeric seals according to ASTM D 2321.
  - 2. Join solvent cement joint pipe and fittings with solvent cement according to ASTM D 2855 and ASTM F 402.
  - 3. Install according to ASTM D 2321.
- C. System Piping Joints: Make joints using system manufacturer's couplings, unless otherwise indicated.
- D. Join piping made of different materials or dimensions with couplings made for this application. Use couplings that are compatible with and that fit both systems' materials and dimensions.

### 3.6 MANHOLE INSTALLATION

- A. General: Install manholes, complete with appurtenances and accessories indicated.

April 6, 2017

- B. Form continuous concrete channels and benches between inlets and outlet.
- C. Set tops of frames and covers flush with finished surface of manholes that occur in pavements. Set tops 3 inches above finished surface elsewhere, unless otherwise indicated.
- D. Install precast concrete manhole sections with gaskets according to ASTM C 891.
  - 1. Provide rubber joint gasket complying with ASTM C 443 at joints of sections.
- E. Construct cast-in-place manholes as indicated.
- F. Install fiberglass manholes according to manufacturer's written instructions.

### 3.7 CLEANOUT INSTALLATION

- A. Set cleanout frames and covers in earth in cast-in-place concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding grade.
- B. Set cleanout frames and covers in concrete pavement with tops flush with pavement surface.

### 3.8 TAP CONNECTIONS

- A. Make connections to existing piping and underground structures so finished Work complies as nearly as practical with requirements specified for new Work.
- B. Make branch connections to underground structures by cutting opening into structure large enough to allow 3 inches of concrete to be packed around entering connection. Cut end of connection pipe passing through structure wall to conform to shape of and be flush with inside wall, unless otherwise indicated. On outside of structure wall, encase entering connection in 6 inches of concrete for minimum length of 12 inches to provide additional support of collar from connection to undisturbed ground.

April 6, 2017

1. Use concrete that will attain minimum 28-day compressive strength of 3000 psi, unless otherwise indicated.
  2. Use epoxy-bonding compound as interface between new and existing concrete and piping materials.
- C. Protect piping and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

### 3.9 FIELD QUALITY CONTROL

- A. Clear interior of piping and structures of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed.
1. Place plug in end of incomplete piping at end of day and when work stops.
  2. Flush piping between manholes and other structures to remove collected debris, if required by authorities having jurisdiction.
- B. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
1. Submit separate reports for each system inspection.
  2. Defects requiring correction include the following:
    - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
    - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
    - c. Crushed, broken, cracked, or otherwise damaged piping.
    - d. Infiltration: Water leakage into piping.
    - e. Exfiltration: Water leakage from or around piping.
  3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.

HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW #0215-0038

April 6, 2017

4. Reinspect and repeat procedure until results are satisfactory.
- C. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
1. Do not enclose, cover, or put into service before inspection and approval.
  2. Test completed piping systems according to authorities having jurisdiction.
  3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
  4. Submit separate reports for each test.
  5. Perform tests according to procedures of authorities having jurisdiction.

END OF SECTION 02530





April 6, 2017

SECTION 02620 - SUBDRAINAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes subdrainage systems for the following:
  - 1. Catch basins.
- B. Related Section includes the following:
  - 1. Section 02530 "Sanitary Sewerage"
  - 2. Section 02630 "Storm Drainage"

1.3 DEFINITIONS

- A. PVC: Polyvinyl chloride.

1.4 SUBMITTALS

- A. Product Data: For drainage conduit, drainage panels, and geotextile fabrics.
  - 1. Perforated pipe.
  - 2. Geotextile fabrics.

PART 2 - PRODUCTS

2.1 DRAINAGE PIPES AND FITTINGS

- A. Perforated, Corrugated PVC Sewer Pipe and Fittings: ASTM F 800, bell-and-spigot ends, for loose joints except perforations shall conform to requirements of AASHTO M252.

2.2 SOIL MATERIALS

April 6, 2017

- A. Pea Gravel: Clean, hard, durable, free flowing, naturally rounded particles of rock, free from clay lumps, with 100% passing a 3/8" sieve and not over 5% passing a #8 sieve.

## 2.3 GEOTEXTILE FILTER FABRICS

- A. Woven or nonwoven geotextile filter fabric of PP or polyester fibers, or combination of both. Flow rates range from 110 to 330 gpm per sq. ft. when tested according to ASTM D 4491. Available styles are flat and sock.

## PART 3 - EXECUTION

### 3.1 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Section 02300 "Earthwork."

### 3.2 CATCH BASIN SUBDRAINAGE INSTALLATION

- A. Place supporting layer of pea gravel over compacted subgrade to compacted depth of not less than 4 inches. After installing drainage piping, add pea gravel to top of pipe to perform tests. After satisfactory testing, cover piping with pea gravel to elevation of bottom of aggregate base course and compact pea gravel material.
  - 1. Before installing pea gravel, lay geotextile filter fabric in trench and overlap trench sides. After installing pea gravel, wrap top of pea gravel with geotextile filter fabric.

### 3.3 PIPING INSTALLATION

- A. Install piping beginning at low points of system, true to grades and alignment indicated, with unbroken continuity of invert. Bed piping with full bearing in filtering material. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions and other requirements indicated.
  - 1. Install piping pitched down in direction of flow as

April 6, 2017

indicated on Drawings.

2. Lay perforated pipe with perforations down.

3. Excavate recesses in trench bottom for bell ends of pipe.  
Lay pipe with bells facing upslope and with spigot end  
entered fully into adjacent bell.

B. Install PVC piping according to ASTM D 2321.

### 3.4 FIELD QUALITY CONTROL

A. Testing: After installing drainage fill to top of pipe, test drain piping with water to ensure free flow before backfilling. Remove obstructions, replace damaged components, and repeat test until results are satisfactory.

### 3.5 CLEANING

A. Clear interior of installed piping and structures of dirt and other superfluous material as work progresses. Maintain swab or drag in piping and pull past each joint as it is completed. Place plugs in ends of uncompleted pipe at end of each day or when work stops.

END OF SECTION 02620



April 6, 2017

SECTION 02630 - STORM DRAINAGE  
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes storm drainage outside the building.
- B. Related Sections include the following:
  - 1. Section 02300 "Earthwork."
  - 2. Section 02530 "Sanitary Sewerage."
  - 3. Section 02620 "Subdrainage."

1.3 DEFINITIONS

- A. PVC: Polyvinyl chloride plastic.
- B. Drainage Piping: System of piping, fittings and appurtenances for gravity flow of storm drainage.

1.4 PERFORMANCE REQUIREMENTS

- A. Gravity-Flow, Nonpressure-Piping Pressure Ratings: At least equal to system test pressure.

April 6, 2017

#### 1.5 SUBMITTALS

- A. Shop Drawings: Include plans, elevations, details, and attachments for the following:
  - 1. Precast concrete manholes and other structures, including frames, covers, and grates.
- B. Design Mix Reports and Calculations: For each class of cast-in-place concrete.
- C. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not store plastic structures, pipe, and fittings in direct sunlight.
- B. Protect pipe, pipe fittings, and seals from dirt and damage.
- C. Handle precast concrete manholes and other structures according to manufacturer's written rigging instructions.

#### 1.7 PROJECT CONDITIONS

- A. Site Information: Perform site survey, research public utility records, and verify existing utility locations.
- B. Locate existing structures and piping to be closed and abandoned.
- C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify the Owner not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without the Owner's written permission.

April 6, 2017

## PART 2 - PRODUCTS

### 2.1 PIPES AND FITTINGS

A. PVC Sewer Pipe and Fittings: According to the following:

1. ASTM D 3034, Schedule 40, for solvent-cemented or gasketed joints.
  - a. Primer: ASTM F 656
  - b. Solvent Cement: ASTM D 2564
  - c. Gaskets: ASTM F 477, elastomeric seals.

B. Reinforced-Concrete Sewer Pipe and Fittings: ASTM C 76, Class III, and Class IV Wall B for gasketed joints.

1. Gaskets: ASTM C 443, rubber.

### 2.2 CATCH BASINS

A. Normal-Traffic, Precast Concrete Catch Basins: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for rubber gasketed joints.

1. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and having separate base slab or base section with integral floor.
2. Riser Sections: 4-inch minimum thickness, 48-inch diameter, and lengths to provide depth indicated.
3. Top Section: Eccentric-cone type, unless concentric-cone or flat-slab-top type is indicated. Top of cone of size that matches grade rings.
4. Gaskets: ASTM C 443, rubber.
5. Grade Rings: Include two or three reinforced-concrete rings, of 6- to 9-inch total thickness, that match 24-inch-diameter frame and grate.
6. Steps: Manufactured from deformed, 3/8-inch minimum steel reinforcement rod complying with ASTM A 615 and encased in polypropylene complying with ASTM D 2416 "Propylene Plastic Molding and Extrusion Materials".

April 6, 2017

Steps shall comply with local utility company standards.  
Omit steps on catch basins less than 60 inches deep.

7. Pipe Connectors: ASTM C 923, resilient, of size required, for each pipe connecting to base section.

- B. Frames and Grates: ASTM A 536, Grade 60-40-18, ductile iron designed for heavy-duty service. EJIW 5105 with "M-3" grate, EJIW 1040 with type "A" solid cover, and EJIW type "N" cover.

1. Size: 24 by 24 inches minimum, unless otherwise indicated.
2. Grate Free Area: Approximately 50 percent, unless otherwise indicated.

## 2.3 CONCRETE

- A. General: Cast-in-place concrete according to ACI 318, ACI 350R, and the following:

1. Cement: ASTM C 150, Type II.
2. Fine Aggregate: ASTM C 33, sand.
3. Coarse Aggregate: ASTM C 33, crushed gravel.
4. Water: Potable.

- B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water-cementitious ratio.

1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.
2. Reinforcement Bars: ASTM A 615, Grade 60, deformed steel.

## 2.4 CLEANOUTS

- A. Cleanouts: ASME A112.36.2M, round, cast-iron housing with clamping device and round, secured, scoriated, cast-iron cover. Include cast-iron ferrule with inside calk or spigot connection and countersunk, tapered-thread, brass closure plug. Use units with top-loading classifications according to the following applications:

1. Light Duty: In earth or grass foot-traffic areas.



April 6, 2017

2. Sewer Pipe Fitting and Riser to Cleanout: ASTM A 74, Service class, cast-iron soil pipe and fittings.

- B. PVC Cleanouts: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

### PART 3 - EXECUTION

#### 3.1 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Section 02300 "Earthwork."

#### 3.2 PIPING APPLICATIONS

- A. General: Include watertight, silttight, or soiltight joints, unless watertight or silttight joints are indicated.
- B. Refer to Part 2 of this Section for detailed specifications for pipe and fitting products listed below. Use pipe, fittings, and joining methods according to applications indicated.
- C. Gravity-Flow Piping: Use the following:
1. NPS 4 and NPS 8: PVC sewer pipe and fittings, solvent-cemented joints, or gaskets and gasketed joints.
  2. NPS 12 to NPS 48: Reinforced-concrete sewer pipe and fittings, gaskets, and gasketed joints.

#### 3.3 INSTALLATION, GENERAL

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets,

April 6, 2017

seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab or drag in line, and pull past each joint as it is completed.

- C. Use proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- D. Install gravity-flow piping and connect to building's storm drains, of sizes and in locations indicated. Terminate piping as indicated.
  - 1. Install piping pitched down in direction of flow, at minimum slope of 1 percent, unless otherwise indicated.
  - 2. Install piping with 36-inch minimum cover.

#### 3.4 PIPE JOINT CONSTRUCTION AND INSTALLATION

- A. General: Join and install pipe and fittings according to installations indicated.
- B. PVC Sewer Pipe and Fittings: As follows:
  - 1. Join solvent-cement joint pipe and fittings with solvent cement according to ASTM D 2855 and ASTM F 402.
  - 2. Join pipe and gasketed fittings with gaskets according to ASTM D 2321.
  - 3. Install according to ASTM D 2321.
- C. Concrete Pipe and Fittings: Install according to ACPA's "Concrete Pipe Installation Manual." Use the following seals:
  - 1. Round Pipe and Fittings: ASTM C 443, rubber gaskets.
- D. System Piping Joints: Make joints using system manufacturer's couplings, unless otherwise indicated.
- E. Join piping made of different materials or dimensions with couplings made for this application. Use couplings that are

April 6, 2017

compatible with and that fit both systems' materials and dimensions.

### 3.5 CATCH-BASIN INSTALLATION

- A. Construct catch basins to sizes and shapes indicated.
- B. Set frames and grates to elevations indicated.

### 3.6 CONCRETE PLACEMENT

- A. Place cast-in-place concrete according to ACI 318 and ACI 350R.

### 3.7 TAP CONNECTIONS

- A. Make connections to existing piping and underground structures so finished Work complies as nearly as practical with requirements specified for new Work.
- B. Protect existing piping and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

### 3.8 FIELD QUALITY CONTROL

- A. Clear interior of piping and structures of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed.
  - 1. In large, accessible piping, brushes and brooms may be used for cleaning.
  - 2. Place plug in end of incomplete piping at end of day and when work stops.
  - 3. Flush piping between manholes and other structures to remove collected debris, if required by authorities having jurisdiction.
- B. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.

April 6, 2017

1. Submit separate reports for each system inspection.
  2. Defects requiring correction include the following:
    - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
    - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
    - c. Crushed, broken, cracked, or otherwise damaged piping.
    - d. Infiltration: Water leakage into piping.
    - e. Exfiltration: Water leakage from or around piping.
  3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
  4. Reinspect and repeat procedure until results are satisfactory.
- C. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects in accordance with local municipalities' requirements.
1. Do not enclose, cover, or put into service before inspection and approval.
  2. Test completed piping systems according to authorities having jurisdiction.
  3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
  4. Submit separate reports for each test.
  5. Leaks and loss in test pressure constitute defects that must be repaired.
  6. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

END OF SECTION 02630

April 6, 2017

SECTION 02665 - WATER DISTRIBUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes water systems piping for potable water service and fire protection service outside the building.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. Minimum Working Pressure Ratings: Except where otherwise indicated, the following are minimum pressure requirements for water system piping.

- 1. Underground Piping: 150 psig (1035 kPa).

1.4 SUBMITTALS

- A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.
- B. Product data, including pressure rating, rated capacity, and settings of selected models for the following:
  - 1. Valves.
  - 2. Fire hydrants.
- C. Shop drawings for precast concrete pits. Include frames and covers. Include drains when indicated.

April 6, 2017

1.5 QUALITY ASSURANCE

- A. Comply with requirements of utility supplying water.
- B. Comply with standards of authorities having jurisdiction for fire protection systems. Include materials, hose threads, installation, and testing.
- C. Comply with standards of authorities having jurisdiction for potable water piping and plumbing systems. Include materials, installation, testing, and disinfection.
- D. Provide listing/approval stamp, label, or other marking on equipment made to specified standards.
- E. Product Options: Water systems specialties and accessories are based on specific types, manufacturers, and models indicated. Components by other manufacturers but having equal performance characteristics may be considered, provided deviations in dimensions, operation, and other characteristics do not change design concept or intended performance as judged by Architect. The burden of proof of equality of products is on Contractor.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Preparation for Transport: Prepare valves, including fire hydrants, for shipping as follows:
  - 1. Ensure that valves are dry and internally protected against rust and corrosion.
  - 2. Protect valves against damage to threaded ends, flange faces, and weld ends.
  - 3. Set valves in best position for handling. Set valves closed to prevent rattling.
- B. Storage: Use the following precautions for valves, including fire hydrants, during storage.
  - 1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
  - 2. Protect valves from weather. Store valves indoors and maintain temperature higher than ambient dew point

April 6, 2017

temperature. Support valves off-ground or pavement watertight enclosures when outdoor storage is necessary.

- C. Handling: Use sling to handle valves and fire hydrants whose size requires handling by crane or lift. Rig valves to avoid damage to exposed valve parts. Do not use handwheels or stems as lifting or rigging points.
- D. Deliver pipes and tubes with factory-applied end-caps. Maintain end-caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
- E. Protect stored pipes and tubes from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.
- F. Protect flanges, fittings, and piping specialties from moisture and dirt.

#### 1.7 PROJECT CONDITIONS

- A. Perform site survey, research public utility records, and verify existing utility locations. Contact utility-locating service for area where Project is located.
- B. Verify that water system piping may be installed in compliance with original design and referenced standards.

#### 1.8 SEQUENCING AND SCHEDULING

- A. Coordinate connection to water main with utility company, and Owner.
- B. Coordinate with pipe materials, sizes, entry locations, and pressure requirements of fire protection systems piping.
- C. Coordinate with other utility work.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

April 6, 2017

A. Manufacturers: Subject to compliance with the Shelby Township Standard Specifications for Construction and the Standard Water Main Detail Sheet:

1. Drilling Machine Corporation Stops:
  - a. Mueller Co., Grinnell Corp. (H15000)
2. Brass Corporation Stops and Valves:
  - a. Ford Meter Box Co., Inc.
  - b. Hays Div., Romac Industries
  - c. A.Y. McDonald Mfg. Co.
  - d. Mueller Co., Grinnell Corp.
  - e. Or approved equal
3. Gate Valves:
  - a. American Darling Valve Div., American Cast Iron Pipe Co.
  - b. Clow Valve Co. Div., McWane, Inc.
  - c. East Jordan Iron Works, Inc.
  - d. Gem Sprinkler Co. Div., Grinnell Corp.
  - e. Hammond Valve Corp.
  - f. Kennedy Valve Div., McWane, Inc.
  - g. Milwaukee Valve Co., Inc.
  - h. Mueller Co., Grinnell Corp.
  - i. Nibco, Inc.
  - j. Stockham Valves & Fittings, Inc.
  - k. U.S. Pipe & Foundry Co.
  - l. Waterous Co.
  - m. Or approved equal
4. Dry-Barrel Fire Hydrants:
  - a. East Jordan Iron Works, Inc.
  - b. Mueller Co., Grinnell Corp.
  - c. Traverse City Iron Works.
  - d. Or approved equal



April 6, 2017

## 2.2 PIPES AND TUBES

- A. Refer to Part 3 Article "Piping Applications" for identification of systems where pipe and tube materials specified below are used.
- B. Ductile-Iron Pipe: AWWA C151, Class 54.
  - 1. Lining: AWWA C104, double cement lining with bituminous seal coat.
  - 2. Gaskets, Glands, and Bolts and Nuts: AWWA C111.
  - 3. Push-On-Joint-Type Pipe: AWWA C111, rubber gaskets.
  - 4. Mechanical-Joint-Type Pipe: AWWA C111, rubber gaskets, ductile- or cast-iron glands, and steel bolts and nuts.

## 2.3 PIPE AND TUBE FITTINGS

- A. Refer to Part 3 Article "Piping Applications" for identification of systems where pipe and tube fitting materials specified below are used.
- B. Ductile-Iron and Cast-Iron Pipe Fittings: AWWA C153, ductile-iron compact fittings, 350-psig (2400 kPa) pressure rating.
  - 1. Lining: AWWA C104, cement mortar.
  - 2. Gaskets: AWWA C111, rubber.

## 2.4 JOINING MATERIALS

- A. Refer to Part 3 Article "Piping Applications" for identification of systems where joining materials specified below are used.
- B. Ductile-Iron Pipe and Ductile-Iron or Cast-Iron Fittings: The following materials apply:
  - 1. Push-On Joints: AWWA C111 rubber gaskets and lubricant.
  - 2. Mechanical Joints: AWWA C111 ductile-iron or gray-iron glands, high-strength steel bolts and nuts, and rubber gaskets.
  - 3. Flanged Joints: AWWA C115 ductile-iron or gray-iron pipe flanges, rubber gaskets, and high-strength steel bolts and nuts.

April 6, 2017

- a. Gaskets: Rubber, flat face, 1/8 inch (3 mm) thick except where other thickness is indicated; and full-face or ring type except where other type is indicated.
  - b. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, except where other material is indicated.
- C. Pipe Couplings: Iron-body sleeve assembly, fabricated to match outside diameters of pipes to be joined.
- 1. Sleeve: ASTM A 126, Class B, gray iron.
  - 2. Followers: ASTM A 47, Grade 32510, or ASTM A 536 ductile iron.
  - 3. Gaskets: Rubber.
  - 4. Bolts and Nuts: AWWA C111.
  - 5. Finish: Enamel paint.

## 2.5 VALVES

- A. Furnish and install in accordance with the Shelby Township Standard Specifications for construction and the Standard Water Main Detail Sheet.
- B. Nonrising Stem Gate Valves 3 Inches (80 mm) and Larger: AWWA C500, cast-iron double disc, bronze disc and seat rings, bronze stem, cast-iron or ductile-iron body and bonnet, stem nut, 200-psig (1380 kPa) working pressure, mechanical joint ends. The direction of turning to open shall be left.
- C. Valve Boxes: Cast-iron box having top section and cover with lettering "WATER", bottom section with base of size to fit over valve and barrel approximately 5 inches (124 mm) in diameter, and adjustable cast-iron extension of length required for depth of bury of valve.

## 2.6 FIRE HYDRANTS

- A. Furnish and install in accordance with the Shelby Township Standard Specifications for Construction and the Standard Water Main Detail Sheet.
- B. General: Cast-iron body, compression-type valve, opening against pressure and closing with pressure, 6-inch (150 mm)

April 6, 2017

mechanical joint inlet, 150-psig (1035 kPa) working pressure.

- C. Outlet Threads: NFPA 1963, with external hose thread used by local fire department. Include cast-iron caps with steel chains.
- D. Operating and Cap Nuts: Pentagon 7/16 inch (40 mm) point to flat.
- E. Direction of Opening: Open hydrant valve by turning operating nut to the left, or counterclockwise.
- F. Finish: Yellow exterior alkyd gloss enamel paint.
- G. Dry-Barrel Fire Hydrants: AWWA C502, two 2-1/2-inch (65mm) and one 4-1/2-inch (113 mm) outlets, 5-1/4-inch (133 mm) main valve, drain valve, and 6-inch (150 mm) mechanical joint inlet.

## 2.7 ANCHORAGES

- A. Clamps, Straps, and Washers: ASTM A 506, steel.
- B. Rods: ASTM A 575, steel.
- C. Rod Couplings: ASTM A 197, malleable iron.
- D. Bolts: ASTM A 307, steel.
- E. Cast-Iron Washers: ASTM A 126, gray iron.
- F. Concrete Reaction Backing: Portland cement concrete mix, 2500 psi (20.7 Mpa) at 28 days.
  - 1. Cement: ASTM C 150, Type 1.
  - 2. Fine Aggregate: ASTM C 33, crushed sand.
  - 3. Coarse Aggregate: ASTM C 33, crushed gravel.
  - 4. Water: Potable.

## PART 3 - EXECUTION

### 3.1 EARTHWORK

April 6, 2017

- A. Excavation, trenching, and backfilling are specified in Section 02300 "Earthwork".

### 3.2 PIPING APPLICATIONS

- A. Refer to Part 2 of this Section for detailed specifications for pipe and fittings products listed below. Use pipe, tube, fittings, and joining methods according to the following applications. Piping in pits and inside building may be joined with flanges or couplings, instead of joints indicated, for grooved-end AWWA-size piping.
- B. Use pipe, tube, fittings, and joining methods according to following applications:
  - 1. 4 Inches (100 mm) to 12 inches (300 mm): Class 250, ductile-iron pipe, ductile-iron compact fittings, and push-on or mechanical joints.

### 3.3 JOINT CONSTRUCTION

- A. Ductile-Iron Piping Gasketed Joints: Construct joints according to AWWA C600.
- B. Flanged Joints: Align flanges and install gaskets. Assemble joints by sequencing bolt tightening. Use lubricant on bolt threads.

### 3.4 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. General Locations and Arrangements: Drawings indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated except where deviations to layout are approved on coordination drawings.
- B. Install piping at indicated slope.
- C. Install components having pressure rating equal to or greater than system operating pressure.

April 6, 2017

- D. Install piping free of sags and bends.
- E. Locate groups of pipes parallel to each other, spaced to permit valve servicing.
- F. Install fittings for changes in direction and branch connections.

### 3.5 PIPING INSTALLATION

- A. Water Main Connection: Tap water main with size and in location as indicated according to requirements of water utility.
- B. Install ductile-iron pipe and ductile-iron and cast-iron fittings according to AWWA C600.
- C. Bury piping at minimum depth of 5 feet below finished grade and in accordance with the Shelby Township Standard Specifications for Construction and the Standard Water Main Detail Sheet.

### 3.6 ANCHORAGE INSTALLATION

- A. Anchorages: Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches. Include anchorages for the following piping systems:
  - 1. Gasketed-Joint, Ductile-Iron Piping: According to AWWA C600.
- B. Apply full coat of asphalt or other acceptable corrosion-retarding material to surfaces of installed ferrous anchorage devices.

### 3.7 VALVE INSTALLATION

- A. General Application: Use mechanical-joint-end valves for 3-inch (80 mm) and larger buried installation. Use threaded-and flanged-end valves for installation in pits and inside building.
- B. AWWA-Type Gate Valves: Comply with AWWA C600. Install buried

April 6, 2017

valves with stem pointing up and with cast-iron valve box, unless noted otherwise on local Municipalities' standard detail sheets

### 3.8 FIRE HYDRANT INSTALLATION

- A. AWWA-Type Fire Hydrants: Comply with AWWA M17. Install with gate valve and provision for drainage as indicated.

### 3.9 FIELD QUALITY CONTROL

- A. Hydrostatic Tests: The test shall be made at a pressure of 150 pounds per square inch for water main. The full pressure shall be maintained in each section being tested, by pumping water into the pipe for a period of at least 2 hours. Any faulty pipe, fittings, gate valves or other accessories discovered during testing shall be replaced with sound material, and the test shall be repeated until specific requirements are met. The maximum permissible leakage (as measured by the amount of water pumped into the pipe during the test period) shall not exceed a rate of 0.10 gallons per hour per inch diameter of main per 1000 linear feet of pipe. All tests shall be coordinated with and witnessed by the local agency having jurisdiction over the water system.

### 3.10 CLEANING

- A. Clean and disinfect water distribution piping as follows:
  - 1. Purge new water distribution piping systems and parts of existing systems that have been altered, extended, or repaired prior to use.
  - 2. Use purging and disinfecting procedure prescribed by authority having jurisdiction or, if method is not prescribed by that authority, use procedure described in AWWA C651 or as described below:
    - a. Comply with NFPA 24 for flushing of piping. Flush piping system with clean, potable water until dirty water does not appear at points of outlet.
    - b. Fill system or part of system with water/chlorine solution containing at least 50 parts per million of

HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW #0215-0038

April 6, 2017

chlorine. Isolate (valve off) system or part thereof and allow to stand for 24 hours.

- c. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 parts per million of chlorine; isolate and allow to stand for 3 hours.
- d. Following allowed standing time, flush system with clean, potable water until chlorine does not remain in water coming from system.
- e. Submit water samples in sterile bottles to authority having jurisdiction. Repeat procedure if biological examination made by authority shows evidence of contamination.

B. Prepare reports for purging and disinfecting activities.

END OF SECTION 02665





April 6, 2017

SECTION 02740 - HOT-MIX ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. All work to be performed under this Section shall be in accordance with the Washington Township or Macomb County Department of Roads Paving Standard Detail sheets.

1.2 SUMMARY

- A. Work under this Section includes the following:
  - 1. Hot-mix asphalt paving.
  - 2. Hot-mix asphalt patching.
- B. Related Sections include the following:
  - 1. Section 02300 "Earthwork."
  - 2. Section 02751 "Cement Concrete Pavement"

1.3 DEFINITIONS

- A. Hot-Mix Asphalt Paving Terminology: Refer to MDOT 2012 Standard Specifications for Construction.
- B. MDOT: Michigan Department of Transportation.
- C. HMA: Hot Mix Asphalt

1.4 SYSTEM DESCRIPTION

- A. Provide hot-mix asphalt paving according to materials, workmanship, and other applicable requirements of standard specifications of the following:
  - 1. Standard Specification: State of Michigan, Department of Transportation (MDOT), 2012 Standard Specification for Construction.

April 6, 2017

#### 1.5 SUBMITTALS

- A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.
- B. Job-Mix Designs: For each job mix proposed for the Work.
- C. Material Test Reports: For each paving material.
- D. Material Certificates: For each paving material, signed by manufacturers.

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer.
  - 1. Manufacturer shall be a paving-mix manufacturer registered with and approved by authorities having jurisdiction or the Michigan Department of Transportation.
- B. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated, as documented according to ASTM E 548.
- C. Regulatory Requirements: Comply with State of Michigan, Department of Transportation (MDOT), and 2012 Standard Specification for Construction.

#### 1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not apply HMA materials if subbase is wet or excessively damp or if the following conditions are not met:
  - 1. Prime and Tack Coats: Minimum surface temperature of 60 deg F.
  - 2. Slurry Coat: Comply with weather limitations of ASTM D 3910.
  - 3. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
  - 4. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

April 6, 2017

## PART 2 - PRODUCTS

### 2.1 AGGREGATES

- A. Mineral Filler: ASTM D 242, rock or slag dust, hydraulic cement, or other inert material.
- B. Paving Mixture Aggregates
  - 1. Fine Aggregates shall conform to MDOT Designation 3C and 4C.
  - 2. Mineral Filler shall conform to MDOT Designation 3MF.

### 2.2 ASPHALT MATERIALS

- A. Bond Coat: SS-1H.

### 2.3 MIXES

- A. Hot-Mix Asphalt: Provide dense, hot-laid, hot-mix asphalt plant mixes designed according to procedures in Michigan Department of Transportation "2012 Standard Specifications for Construction".
- B. Emulsified-Asphalt Slurry: ASTM D 3910, Type I , consisting of emulsified asphalt, fine aggregate, and mineral fillers.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.
- B. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.
- C. Proceed with paving only after unsatisfactory conditions have been corrected.

### 3.2 PATCHING

- A. Hot-Mix Asphalt Pavement: Sawcut perimeter of patch to full depth and excavate existing pavement section to sound base.

April 6, 2017

Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement, unless otherwise indicated. Excavate trench as required for utility installation. Maintain maximum 1:1 side slopes on utility trench. Backfill trench and compact per Section 2300 "Earthwork."

- B. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd.
  - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
  - 2. Avoid smearing or staining adjoining surfaces, appurtenances and surroundings. Remove spillages and clean affected surfaces.
- C. Patching: Place and compact asphalt pavement per paving sections shown on construction drawings. Finish flush with adjacent surfaces.

### 3.3 SURFACE PREPARATION

- A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
  - 1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

### 3.4 PLACING HOT-MIX ASPHALT

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
  - 1. Place hot-mix asphalt base course in the number of lifts and thicknesses indicated.
  - 2. Place hot-mix asphalt wearing course in single lift.
  - 3. Spread mix at minimum temperature of 250 deg F.

April 6, 2017

4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes, unless otherwise indicated.
  5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
- B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.
1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete a section of asphalt base course before placing asphalt surface course.
- C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.
- 3.5 JOINTS
- A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions with same texture and smoothness as other sections of hot-mix asphalt course.
1. Clean contact surfaces and apply tack coat to joints.
  2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
  3. Offset transverse joints, in successive courses, a minimum of 24 inches.
  4. Construct transverse joints as described in AI MS-22, "Construction of Hot Mix Asphalt Pavements."
  5. Compact joints as soon as hot-mix asphalt will bear roller weight without displacement.
  6. Compact HMA at joints to a density within 2 percent of specified course density.

April 6, 2017

### 3.6 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.
  - 1. Complete compaction before mix temperature cools to 185 deg F.
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
  - 1. Average Density: 96 percent of reference laboratory density according to AASHTO T 245, but not less than 94 percent nor greater than 100 percent.
  - 2. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
- F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

April 6, 2017

- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

### 3.7 INSTALLATION TOLERANCES

- A. Thickness: Compact each course to produce the thickness indicated within the following tolerances:
  - 1. Leveling Course: Plus or minus 1/2 inch.
  - 2. Wearing Course: Plus 1/4 inch, no minus.
- B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
  - 1. Leveling Course: 1/4 inch.
  - 2. Wearing Course: 1/8 inch.
  - 3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

### 3.8 FIELD QUALITY CONTROL

- A. Testing Agency: A qualified independent testing and inspecting agency (approved by the Owner) will be engaged by the site asphalt Contractor to perform field tests and inspections and to prepare test reports.
  - 1. Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from specified requirements.
- B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- C. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.
- D. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979 or AASHTO T 168.

April 6, 2017

1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.

- E. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

### 3.9 DISPOSAL

- A. Remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow excavated materials to accumulate on-site.

END OF SECTION 02740



April 6, 2017

SECTION 02751 - CEMENT CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Macomb County Road Department Standards and Requirements apply to all work within the Road Right-Of-Way.

1.2 SUMMARY

- A. This Section includes exterior cement concrete pavement for the following:
  - 1. Curbs and gutters.
  - 2. Walkways.
  - 3. Drives
- B. Related Sections include the following:
  - 1. Section 02300 "Earthwork" for subgrade preparation, grading, and base course.
  - 2. Section 03001 "Concrete Work" for general building applications of concrete.

1.3 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixes: For each concrete pavement mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:

1.4 QUALITY ASSURANCE

April 6, 2017

- A. Installer Qualifications: An experienced installer who has completed pavement work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
- C. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixes.

#### 1.5 PROJECT CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

### PART 2 - PRODUCTS

#### 2.1 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.
  - 1. Use flexible or curved forms for curves of a radius 100 feet or less.
- B. 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.

#### 2.2 STEEL REINFORCEMENT

- A. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
- B. Reinforcement Bars: ASTM A 615, Grade 60, deformed.
- C. Plain Steel Wire: ASTM A 82, as drawn.

April 6, 2017

- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement bars, welded wire fabric, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
  - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

## 2.3 CONCRETE MATERIALS

- A. General: Use the same brand and type of cementitious material from the same manufacturer throughout the Project.
- B. Portland Cement: ASTM C 150, Type I.
  - 1. Fly Ash: Not allowed.
- C. Aggregate: ASTM C 33, uniformly graded.
  - 1. Do not use fine or coarse aggregates containing substances that cause spalling.
- D. Water: ASTM C 94.

## 2.4 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.05 percent water-soluble chloride ions by mass of cement and to be compatible with other admixtures.
- B. Air-Entraining Admixture: ASTM C 260.
- C. Water-Reducing Admixture: ASTM C 494, Type A.
- D. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
- E. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
- F. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

## 2.5 CURING MATERIALS

- A. Water: Potable.

April 6, 2017

- B. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- C. Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

## 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.
- B. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class and grade to suit requirements, and as follows:
  - 1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

## 2.7 CONCRETE MIXES

- A. Prepare design mixes, proportioned according to ACI 211.1 and ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.
- B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the trial batch method.
  - 1. Do not use Owner's field quality-control testing agency as the independent testing agency.
- C. Proportion mixes to provide concrete with the following properties:
  - 1. Compressive Strength (28 Days): 4000 psi.
  - 2. Maximum Water-Cementitious Materials Ratio: 0.50.
  - 3. Slump Limit: 4 inches.
    - a. Slump Limit for Concrete Containing High-Range Water-Reducing Admixture: Not more than 8 inches after adding admixture to plant- or site-verified, 2- to 3-inch slump.
- D. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content of 6 percent plus or minus 1 percent.

April 6, 2017

## 2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with requirements and with ASTM C 94 and ASTM C 1116.
  - 1. When air temperature is between 85 deg F 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.
  - 2. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Proof-roll prepared base course surface to check for unstable areas and verify need for additional compaction. Proceed with pavement only after nonconforming conditions have been corrected and base course is ready to receive pavement.
- B. Remove loose material from compacted base surface immediately before placing concrete.

### 3.2 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form release agent to ensure separation from concrete without damage.

### 3.3 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating reinforcement and with recommendations in CRSI's "Placing Reinforcing Bars" for placing and supporting reinforcement.

April 6, 2017

- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

### 3.4 JOINTS

- A. General: Construct construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.
  - 1. When joining existing pavement, place transverse joints to align with previously placed joints.
- B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour, unless pavement terminates at isolation joints.
  - 1. Provide preformed galvanized steel or plastic keyway-section forms or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
  - 2. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
  - 3. Use epoxy bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
  - 1. Locate expansion joints at intervals of 50 feet, unless otherwise indicated.
  - 2. Extend joint fillers full width and depth of joint.

April 6, 2017

3. Terminate joint filler less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
  4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
  5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
  6. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- D. 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.
- E. Control Joints: Form control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
1. Grooved Joints: Form control joints after initial floating by grooving and finishing each edge of joint with groover tool to the following radius. Repeat grooving of control joints after applying surface finishes. Eliminate groover marks on concrete surfaces.
    - a. Radius: 1/4 inch.
  2. Sawed Joints: Form control 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 developing random control cracks.
- F. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to the following radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.
1. Radius: 1/4 inch.

### 3.5 CONCRETE PLACEMENT

April 6, 2017

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcement steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. Remove snow, ice, or frost from base course surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten base course to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are at the required finish elevation and alignment.
- D. Comply with requirements and with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery, at Project site, or during placement.
- F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- G. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete according to recommendations in ACI 309R.
  - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.
- H. Screed pavement surfaces with a straightedge and strike off. Commence initial floating using bull floats or darbies to form an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading dry-shake surface treatments.



April 6, 2017

- I. Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove and replace with formed concrete.
- J. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  - 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
  - 2. Do not use frozen materials or materials containing ice or snow.
  - 3.
  - 4. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.
- K. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows when hot-weather conditions exist:
  - 1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 deg F. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  - 2. Cover reinforcement steel with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
  - 3. Fog-spray forms, reinforcement steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

### 3.6 CONCRETE FINISHING

- A. General: Wetting of concrete surfaces during screeding, initial floating, or finishing operations is prohibited.

April 6, 2017

- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and the concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots, and fill low spots. Refloat surface immediately to uniform granular texture.
  - 1. Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

### 3.7 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and follow recommendations in ACI 305R for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to 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. Begin curing after finishing concrete, but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure concrete by moisture curing, curing compound, or a combination of these as follows:
  - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with water.
  - 2. 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.

### 3.8 PAVEMENT TOLERANCES

April 6, 2017

- A. Comply with tolerances of ACI 117 and as follows:
  - 1. Elevation: 1/4 inch.
  - 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
  - 3. Surface: Gap below 10-foot- long, unleveled straightedge not to exceed 1/4 inch.
  - 4. Contraction Joint Depth: Plus 1/4 inch, no minus.
  - 5. Joint Width: Plus 1/8 inch, no minus.

### 3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement. Sampling and testing for quality control may include those specified in this Article.
- B. Testing Services: Testing shall be performed according to the following requirements:
  - 1. Sampling Fresh Concrete: Representative samples of fresh concrete shall be obtained according to ASTM C 172, except modified for slump to comply with ASTM C 94.
  - 2. Slump: ASTM C 143; one test at point of placement for each truckload. Additional tests will be required when concrete consistency changes.
  - 3. Air Content: ASTM C 231, pressure method; one test for each compressive-strength test, but not less than one test for each day's pour of each type of air-entrained concrete.
  - 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each set of compressive-strength specimens.
  - 5. Compression Test Specimens: ASTM C 31; one set of four standard cylinders for each compressive-strength test. Cylinders shall be molded and stored for laboratory-cured test specimens unless field-cured test specimens are required.
  - 6. Compressive-Strength Tests: ASTM C 39; one set for each day's pour of each concrete class exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd.. One specimen shall be tested at 7 days and two specimens at 28 days; one specimen shall be retained in reserve for later testing if required.

April 6, 2017

7. When frequency of testing will provide fewer than five compressive-strength tests for a given class of concrete, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
8. When total quantity of a given class of concrete is less than 50 cu. yd., Architect may waive compressive-strength testing if adequate evidence of satisfactory strength is provided.
9. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive compressive-strength test results equal or exceed specified compressive strength and no individual compressive-strength test result falls below specified compressive strength by more than 500 psi.

C. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 24 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing agency, concrete type and class, location of concrete batch in pavement, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

D. Additional Tests: Testing agency shall make additional tests of the concrete when test results indicate slump, air entrainment, concrete strengths, or other requirements have not been met, as directed by Architect. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

### 3.10 REPAIRS AND PROTECTION

- A. Remove and replace concrete pavement that is broken, damaged, or defective, or does not meet requirements in this Section.
- B. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible

HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW #0215-0038

April 6, 2017

by removing surface stains and spillage of materials as they occur.

- C. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 02740



April 6, 2017

SECTION 02764 - PAVEMENT JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes joint sealants for the following applications, including those specified by reference to this Section:
  - 1. Exterior joints in the following horizontal traffic surfaces:
    - a. Isolation and control joints in cast-in-place concrete walks and concrete pavement.
    - b. Other joints as indicated.
- B. Related Sections include the following:
  - 1. Section 02751 "Cement Concrete Pavement.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples: Manufacturer's color charts.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An Installer who experienced in the installation of elastomeric sealants required for this Project.

April 6, 2017

- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

#### 1.6 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
  - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
  - 2. When joint substrates are wet.
  - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
  - 4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

#### 2.2 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

#### 2.3 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- B. Stain-Test-Response Characteristics: Provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.



April 6, 2017

C. Multicomponent Nonsag Urethane Sealant for Use T (Traffic):

1. Products:
  - a. Pecora Corporation; Dynatred.
  - b. Sika Corporation, Inc.; Sikaflex - 2c NS TG.
  - c. Sonneborn, Division of ChemRex Inc.; NP 2. or Sonolastic SL 2 -SG.
  - d. Tremco; THC-901
  - e. Or approved equal
2. Type and Grade: M (multicomponent) and NS (nonsag).
3. Class: 25.
4. Uses Related to Exposure: T (traffic).
5. Uses Related to Joint Substrates: M, A, and O.

2.4 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type B (bicellular material with a surface skin) or Type C (closed-cell material with a surface skin), as approved in writing by joint-sealant manufacturer, and of size and density to control sealant depth:
- C. Expansion- and Isolation-Joint-Filler Strips: Provide one of the following:
  1. ASTM D 1752, cork or self-expanding cork.
  2. Preformed strips of asphalt saturated fiberboard, complying with ASTM D 1751, with plastic expansion joint cap consisting of upper removable piece and lower permanent piece which provides barrier between bituminous fiber and joint sealant:
    - a. Products: Provide the following:
      - 1) "Sealtight Snap-Cap"; W. R. Meadows, Inc.:
  3. Preformed strips manufactured from 100 percent recycled vinyls with fabric strand reinforcement, complying with ASTM D 1752, Section 5, subparagraphs 5.1-5.4 and AASHTO M-153-98.
    - a. Products: Provide the following:
      - 1) "Proflex Vinyl Expansion Joints"; Oscoda Plastics, Inc. (800) 544-9538.

April 6, 2017

## 2.5 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated.
- B. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, old joint sealants, oil, grease, waterproofing, water, surface dirt, and frost.
  - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
    - a. Concrete.
  - 3. Remove laitance and form-release agents from concrete.
  - 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave

April 6, 2017

residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:  
a. Metal.

- B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### 3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 1. Do not leave gaps between ends of sealant backings.
  - 2. Do not stretch, twist, puncture, or tear sealant backings.
  - 3. Remove sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

April 6, 2017

1. Place sealants so they directly contact and fully wet joint substrates.
  2. Completely fill recesses in each joint configuration.
  3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealant from surfaces adjacent to joints.
  2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
- 3.4 CLEANING
- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.
- 3.5 PROTECTION
- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 02764

April 6, 2017

SECTION 02800 - SIE FURNISHINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Shop drawings and general provisions of the Contract, including General and Supplementary conditions and Division 1 Specifications, apply to this Section.

1.02 DESCRIPTION OF WORK:

- A. Provide all labor, materials, necessary equipment and services to complete the Site Furnishings work, as indicated on the drawings, as specified herein or both, except for items indicated "NIC ITEMS".
- B. Included but not necessarily limited to the following:
  - 1. Trash Bin
  - 2. Recycle Bin
  - 3. Bike Rack
  - 4. Bike Repair Station
  - 5. Benches
  - 6. ADA Grill
  - 7. Surface Mounted Binoculars
  - 8. Open Canopy Structure
  - 9. Drinking Fountains

1.03 SUBMITTALS:

- A. Manufacturer's Data:
  - 1. Descriptive data of installation, methods, procedures and maintenance.
- B. Complete shop drawings for all items of work under this section indicating all details of fabrication and installation, including sizes, shapes, finishes, colors, thickness, material quality and all other related work applicable to the items of this section.

April 6, 2017

1.04 DELIVERY, STORAGE AND HANDLING:

- A. Deliver all materials with manufacturer's tags and labels intact.
- B. Store and handle so as to avoid damage.

PART 2 - PRODUCTS

- 2.01 STEELWORX HIP SHELTER - 30' x 64': The Open Canopy structure shall be available through Coverworx (586 486-1088). The structure is a 30' x 64' Steelworx Hip Shelter, Model No. HP-3044-SW. Roofing colors shall be verified by the Owner prior to the purchase of this item. Approved Equals will be considered.
- 2.02 DRINKING FOUNTAINS: Drinking fountains shall be ELKAY Outdoor drinking fountains. Model number specified on the plans. Finish color shall be evergreen. Contractor to purchase the specified drinking fountains from vendor of his choice. Approved equals will be considered.

PART 3 - EXECUTION

3.01 EXAMINATION:

- A. Examine areas and conditions for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION GENERAL:

- A. Comply with manufacturer's written installation instructions, unless more stringent requirements are indicated. Complete field assembly of site furnishings, where required.

April 6, 2017

- B. Install site furnishings level, plumb, true, and securely anchored at locations indicated on plans.
- C. Provide complete shop drawings and manufactured cut sheets on all manufactured items.

### 3.03 CLEANING

- A. After completing installation, inspect components. Remove spots, dirt, and debris. Repair damaged finishes to match original finish or replace component.

END OF SECTION 02800





April 6, 2017

SECTION 02925 - CLEANUP AND RESTORATION

PART 1 - GENERAL

- A. The Contractor shall restore areas disturbed by construction activities to a condition reasonably close to their condition before the project, unless shown otherwise on the plans. Restoration work should be performed as soon as possible after construction work is completed in a particular area.
- B. Upon the completion of work in an area, all excess materials, debris, equipment, and similar items shall be removed from the project area by the Contractor, and disposed of properly.

PART 2 - MATERIALS

Not Applicable.

PART 3 - EXECUTION

3.01 Restoration

- A. Unless otherwise provided; aggregate surfaces, bituminous pavements, and concrete pavements shall be restored by construction of similar replacement surfaces. Aggregate surfaces shall be replaced with the materials and thicknesses described in the specification for aggregate surfaces. Bituminous pavement shall be replaced with the cross sections(s) shown on the plans and in accordance with the specification for bituminous paving. Concrete pavement shall be replaced with pavement in accordance with the specification for Concrete Driveways and Miscellaneous Pavement.
- B. Turf areas shall be restored by re-establishing the turf as described in the specification for turf establishment. All areas disturbed by construction that are not to be surfaced with aggregate or pavement shall be restored with turf, unless otherwise directed.

April 6, 2017

- C. Mailboxes, fences, signs, ornaments, and similar items shall be replaced at the completion of construction. Posts shall be installed plumb. Items that are lost or stolen shall be repaired or replaced at the Contractor's expense. Repairs or replacements shall meet the Owner's approval.

### 3.02 Temporary Restoration of Driving Surfaces

- A. Where a pavement or gravel surface is removed as a result of construction activities, a temporary surface shall be provided and maintained by the Contractor until the permanent surface is provided. Unless otherwise directed, the temporary surface shall be twelve inches of aggregate compacted to at least 95 percent of its maximum density (ASTM D1557) and graded to meet the adjacent, remaining surfaces. Aggregate shall meet the requirements of Series 23A as described in the 2012 Michigan Department of Transportation Specifications.
- B. The Contractor shall regrade the temporary surface and add additional aggregate at intervals necessary to maintain them in a relatively smooth condition.

END OF SECTION

April 6, 2017

SECTION 04100 - MORTAR & GROUT

PART 1. GENERAL

1.01 RELATED DOCUMENTS

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this specification.

1.02 SECTION INCLUDES

- A. Work included in this section consists of furnishing all labor, materials, equipment, and incidentals required for complete installation of mortar and grout for masonry.
- B. Related work specified elsewhere:
  - 1. Section 03001 - ``Concrete`` (Non-shrink grout).

1.03 ENVIRONMENTAL REQUIREMENTS

- A. Recommended Practices for Hot and Cold Weather Masonry Construction as published by the Masonry Industry Council.

PART 2. PRODUCTS

2.01 MATERIALS

- A. Portland Cement: ASTM C150, Type 1 provide natural color or white cement as required to provide mortar color indicated.
- B. Mortar Aggregate: ASTM C144, standard masonry type.
- C. Hydrated Lime: ASTM C207, Type 'S', or 'N'.
- D. Masonry Cement: ASTM C91.
- E. Premix Mortar: ASTM C387.
- F. Grout Aggregate: ASTM C404.
- G. Grout Fine Aggregate: ASTM C144, 100% passing #8 sieve, maximum 5-30% passing #50 sieve.

April 6, 2017

- H. Water: Clean and potable.
- I. Integral water repellant additive meeting ASTM E-514.
- J. Plasticizer:
  - 1. SIKA Chemical Corporation "Intraplast Z".
  - 2. Euclid Chemical Co. "Eucon BK-S".
  - 3. Or approved equal.
- K. Storage of all material shall prevent the intrusion of foreign matter. Store all masonry units on the ground, protected against damage and intrusion of excess moisture. No damaged or deteriorated materials shall be used.

#### 2.02 MORTAR MIXES

- A. Mortar for exterior and interior walls, ASTM C270, Type N or S using the property method unless noted otherwise on structural drawings.
- B. Mortar for all interior and exterior masonry work exposed to earth and/or below grade; ASTM C270, Type 'S', using the property method.
- C. Mortar for above grade exterior veneer and pointing; ASTM C270, Type 'N', using the property method.
- D. Mortar Pigments: Natural and synthetic milled, blended iron oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars.
  - 1. Provide colored mortar pigments: Color shall be as selected by Architect from SGS concentrated A, H and X Series mortar colors as manufactured by Solomon Colors, Springfield, IL 800-624-0261 (or approved equal).
    - a. Carbon added for darker colors shall not exceed 4%.
    - b. Mix shall product uniform and consistent color.
    - c. Inert, stable to atmospheric conditions, sun

April 6, 2017

fast, weather resistant, alkali resistant,  
water insoluble, lime proof and non bleeding.

- d. Free of deleterious fillers and extenders.
- e. Practice size: 95 to 99% minus 325 mesh.
- f. pH: 6.5 to 9.0.
- g. Shall be tested per ASTM C91 and ASTM C270.  
Exceed 1800 psi at 28 days strength  
requirement.

- E. Ready-Mixed Mortar: Cementitious materials, water, and aggregate complying with requirements specified in this Article; combined with set-controlling admixtures to produce a ready-mixed mortar complying with ASTM C 1142.
- F. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494, Type C, and recommended by the manufacturer for use in masonry mortar of composition indicated.

#### 2.03 MORTAR MIXING

- A. Thoroughly mix mortar ingredients in approved type mixing machine in quantities needed for immediate use in accordance with ASTM C270 or C780. Discharge mixer completely before recharging.
- B. All exterior above grade mortar exposed to moisture shall be fabricated with integral water repellant additive.
- C. Blend admixtures in accordance with manufacturer's instructions.
- D. Do not use anti-freeze compounds to lower the freezing point of mortar.

#### 2.04 GROUT MIXES

- A. Bond beams, lintels, engineered masonry, reinforced masonry walls: min. 3000 psi strength at 28 days unless noted otherwise; 8-10 inches slump; pre-mixed grout in accordance with ASTM C94, or batch mixed in accordance with ASTM C476 for fine or course grout.

HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW PROJECT #0215-0038

April 6, 2017

PART 3. EXECUTION

3.01 EXAMINATION AND PREPARATION

- A. Apply bonding agent to existing concrete surfaces.

3.02 INSTALLATION

- A. Install pre-mix mortar and grout in accordance with manufacturer's instructions.
- B. Work grout into masonry cores and cavities to eliminate voids. Do not displace reinforcement. Reinforcing shall be mechanically anchored in masonry cores to prevent displacement during grouting.

END OF SECTION 04100

April 6, 2017

SECTION 04300 - UNIT MASONRY

PART 1. GENERAL

1.01 RELATED DOCUMENTS

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this specification.

1.02 SECTION INCLUDES

- A. Work included in this section consists of furnishing all labor, materials, equipment and incidentals required for complete installation of concrete masonry units including installation of reinforcement, anchorage and accessories.
- B. Related work specified elsewhere:
  - 1. Section 04100 - Mortar & Grout.
  - 2. Section 07200 - Insulation.
  - 3. Section 07175 - Water Repellant Coatings.

1.03 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops the following installed compressive strengths (f'm) at 28 days.
  - 1. For concrete Unit Masonry: As follows, based on net area:  
f'm = 1500 psi

1.04 SUBMITTALS

- A. Provide data on concrete masonry units including proposed reinforcing.
- B. Shop Drawing for stone trim including cutting and setting diagrams.
- C. Provide samples for verification as follows:
  - 1. Full-size units for each different exposed masonry unit required showing the full range of exposed colors, textures, and dimensions to be expected in the completed construction.

April 6, 2017

2. Weep vents in color to match mortar color.
3. Accessories embedded in the masonry.

1.05 QUALITY ASSURANCE

- A. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by another means, as acceptable to authorities having jurisdiction.
- B. Single-Source Responsibility for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from one source and by a single manufacturer for each different product required.
- C. Single-Source Responsibility for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Hot and Cold weather requirements: Recommended Practices for Hot or Cold Weather Masonry Construction as published by the Masonry Industry Council.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms, under cover, and in a dry location to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and other causes. If units become wet, do not install until they are in an air-dried condition.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location.



April 6, 2017

- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

PART 2. PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Concrete block (CMU): ASTM C90, normal weight (>125 pcf). Use for above and below grade, exterior or interior wall applications. Provide units made with ``dry block`` as manufactured by W.R. Grace & Company (or approved equal) for exterior wall applications. This includes exterior walls with veneers.
- B. Color Masonry Units with Krete
  - 1. Standards: Units shall be normal weight block, withstanding compression test loads of at least 3,000 p.s.i. for individual units or 3,500 p.s.i. for an average of five units, basing load figures on the average net area of the blocks. Units shall meet or exceed requirements specified for Type I, ASTM C55-97A.
  - 2. Manufacturer: Units specified herein are based on those manufactured by Grand Blanc Cement Products, Inc. Grand Blanc, Michigan, Phone: 1-800-875-7500. The same manufacturer shall produce all visually related block. (Or approved equal)
  - 3. Finish: Units are to be selected from colors using natural dense aggregates, including those with white cement/white aggregate. Samples shall be submitted for establishing an approved range of color variation and texture. Up to (2) separate colors will be chosen.
  - 4. Shape: Block shall conform to Grand Blanc Cement Products series.

April 6, 2017

- C. Texture of exposed faces of block shall be uniform for all block used in this project. Solid units may be used for bearing under structural members. No units with exposed chipped surfaces will be permitted in areas where exposed.
- D. Provide shapes such as special units at pilaster blocks, column block enclosures, bullnose all external corners, sash recesses, square ends, lintel blocks and other, as required by drawings or specifications.

## 2.02 REINFORCEMENT AND ANCHORAGE

- A. All single wythe joint reinforcement shall be ladder type wire reinforcing consisting of No. 9 gauge deformed side rods, with No. 9 gauge standard ladder type cross rods. All rods shall be mill galvanized using ASTM A153, Class B-2 standards. Out to out spacing of side rods shall be approximately 2" less than the nominal wall thickness. Provide pre-fabricated corners and tee units as required.
- B. For anchorage to steel framing, provide manufacturer's standard anchors with crimped 1/4 inch (6.4 mm) diameter wire anchor section for welding to steel and triangular-shaped wire tie section sized to extend within 1 inch (25 mm) of masonry face and wire diameter of 0.25". Provide one tie on each side of framing where masonry abuts. Ties to be spaced at 16" o.c. vertical
- C. Manufacturers:
  - 1. AA Wire Products Co.
  - 2. Dur-O-Wal.
  - 3. National Wire.
  - 4. Hohmann and Barnard, Inc.
  - 5. Wire Bond.
  - 6. Or approved equal.
- D. Reinforcing Steel: ASTM A615, 60-ksi-yield grade deformed steel bars unprotected finish.

April 6, 2017

2.03 FLASHINGS

- A. Through-wall Flashing: Rubberized asphalt sheet membrane dampproof coursing. Wall flashing material, 40 mil thick as manufactured by W.R. Grace & Company ``Perm-A-Barrier`` (or approved equal), including bituthene mastic for sealing joints, terminations and penetrations.
- B. Pan Flashing: With Drainage mat for single wythe CMU. Pan flashing of 90% open weave polyester mesh with integrated weep spouts and connector bridges of high density polypropylene-block flash as manufactured by Mortar Net Solutions (or approved equal).

2.04 ACCESSORIES

- A. Building Paper: 15# asphalt saturated felt.
- B. Column Wrap: Waxed corrugated cardboard of 15# asphalt saturated felt.
- C. Cavity Wall Insulation: Foamed In Place. Refer to Section 07200.
- D. Weep Vents:
  - 1. Plastic Weep Vent: One-piece, flexible extrusion manufactured from ultraviolet-resistant polypropylene copolymer, designed to weep moisture in masonry cavity to exterior, sized to fill head joints with outside face held back 1/8 inch from exterior face of masonry, in color selected from manufacturer's standard.
- E. Masonry Waterproofing: Clear penetrating coating. Refer to Specification 07175.

2.05 LINTELS

- A. Lintels shall be steel, precast or cast-in-place in accordance with details as shown or scheduled on the drawings.

April 6, 2017

PART 3. EXECUTION

3.01 EXAMINATION AND PREPARATION

- A. Verify that field conditions are acceptable and ready to receive work. Examine rough-in and built-in construction to verify locations prior to installation.
- B. Coordinate placement of anchors supplied to other sections.
- C. Employ skilled mechanics, experienced supervision. Lay masonry plumb, true to line, with level, accurately spaced courses. Break vertical joints unless otherwise indicated. Keep bond plumb. Rack courses, where necessary, without toothing. Lay out facing before setting, minimize cutting closures, jumping bond.
- D. Do not wet concrete masonry. Lay masonry with complete bearing in full beds of mortar. Butter sides for full vertical joints. Shove units into place. Anchor walls not otherwise bonded with ties every 8", every four (4) courses.
- E. Cover top of masonry work at end of day's work with reinforced waterproof non-staining membrane. When air temperature is below 40°F, heat masonry materials, provide cold weather protection necessary to maintain temperature form 40°F. for 48 hours, both side of masonry.
- F. Mix units for exposed unit masonry from several pallets as they are placed to provide a uniform blend of colors and textures.

3.02 COURSING

- A. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness. Lay out walls in advance for accurate spacing of openings, movement type joints, returns, etc. Avoid units of less than half size at corners and jambs.

April 6, 2017

- B. Block unit shall be laid in stack or running bond, as indicated on drawings with vertical joints aligned plumb, horizontal joints level. Joints in back-up work shall be worked out to provide bonding with facing masonry. Joints shall be uniform in width, thickness not to exceed 1/3". Exposed joints in finish work shall be tooled slightly concave, others shall be cut flush.
- C. Initial block course (first course above foundation) in walls (interior or exterior) shall be laid in full mortar beds on shells and cross webs; in other locations, units shall be laid in full mortar beds on shells only. Solid block units shall be laid same as a brick unit. Vertical joints between units shall be filled with mortar between shell ends.
- D. All non-bearing walls and partitions shall terminate against beam soffits, roof, or structural ceilings, unless otherwise shown on drawings, or as stated below. Build wall to within 3/8" of overhead structure on roof, fill top joint and all voids with non-combustible insulation board which has width of 1" less than wall, then caulk joints.
- E. Both bearing and non-bearing masonry walls which enclose corridors, storage or mechanical rooms, shops, and other rooms requiring a rated separation from adjacent areas, must have the top joint as well as all voids at roof deck and elsewhere in or over these walls, filled with cement grout, mortar, or plaster bed of at least 2" in width. Where no ceilings occur in the room, said fill shall be troweled flush with the wall surface or surfaces on the exposed side of the wall.
- F. All interior and exterior block walls shall have control joints 20'-0" o.c. maximum for exterior and 25'-0" to 30'-0" at interior walls. Line up control joints with joints in foundation wall and joints in the veneer. Leave exposed faces on joints ready for caulking. Provide vertical reinforcing in grouted core on each side of exterior masonry control joints. Reinforcing to match vertical wall steel.

April 6, 2017

- G. Bond each course at corners and break vertical joints at least 2". Tee shaped or cross shaped intersecting walls shall have vertical continuous joint. These joints shall be caulked. Provide for continuity of joint reinforcing by providing pre-fabricated ``T'' shaped or ``L'' shaped units.
- H. Provide welded steel masonry reinforcing placed in every second horizontal course in all block walls with at least one layer below a window sill level and one layer above a lintel level. Lay reinforcing on wall and cover with mortar, bed unit as usual. Longitudinal wire shall be lapped not less than 32 diameters at splices. At corners, cut inside rod and bend to proper angle.
- I. Construct bond beams as indicated with concrete grout. Maintain accurate location of reinforcing steel during grout placement.
- J. Grout course solid (or use solid units immediately below window and door openings or other locations where masonry serves as a support for a sill.
- K. Stopping and Resuming Work: In each course, rack back 1/2-unit length for one-half running bond or 1/3-unit length for one-third running bond; do not tooth. Clean exposed surfaces of set masonry and remove loose masonry units and mortar prior to laying fresh masonry.

### 3.03 PLACING AND BONDING

- A. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.
- B. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with fire rated compressible joint filler.

April 6, 2017

3.04 WEEPS AND VENTS

- A. Install weep holes in veneer at 24 inches on center horizontally or as indicated on drawings above through-wall flashing, above shelf angles, and at bottom of walls. Weeps shall be laid with masonry. Weep holes shall not be drilled, cut or carved into mortar joints.

3.05 REINFORCEMENT & ANCHORAGES - SINGLE WYTHE MASONRY

- A. Walls laid up with concrete block, including where used as back-up shall be reinforced with horizontal steel wall reinforcing as specified. Reinforcing shall be of proper width for block wythe, to have side wires over block shells. Place joint reinforcement at 16" o.c. vertical and continuous in first and second joint below top of walls.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum of 3'-0" beyond each side of opening.
- C. Reinforcing in foundation walls (below floor slab) shall be placed every other course, continuous.
- D. Terminate reinforcing each side of control joints; lap end joints 12", form corners by cutting and lapping inside wire, bending outside wire; form intersections by cutting and lapping reinforcing from one wall with other wall. Bed side wires completely in mortar.

3.06 MASONRY FLASHINGS

- A. Extend flashings under, over and through veneer. Turn up minimum 8 inches and bed into mortar joint of backup masonry.
- B. Lap end joints and seal watertight.
- C. All discontinuous flashing shall be turned up one head joint past the opening jamb to form an end dam.

April 6, 2017

- D. Use flashing manufacturer's recommended adhesive and sealer.

3.07 LINTELS

- A. Construct concrete block lintels over window openings, door openings and other openings as indicated on the structural plans or otherwise required.
- B. Maintain minimum bearing each side of opening of 8" or as specified on structural drawings. Align end of lintel with vertical block joints.

3.08 GROUTED COMPONENTS

- A. Reinforce bond beams as detailed.
- B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
- C. Place and consolidate grout fill without displacing reinforcing.
- D. At beam bearing locations, fill masonry cores with grout for a minimum 12 inches either side of member and three courses vertical, unless otherwise noted.

3.09 ENGINEERED MASONRY

- A. Lay masonry units with core cells vertically aligned and cavities between wythes clear of mortar and unobstructed.
- B. Reinforce masonry unit cores and cavities with reinforcement bars and grout as indicated. Provide vertical bars in corners. Provide vertical bars at each side of all masonry openings. Vertical bars to continue at noted spacing above openings.
- C. Secure vertical reinforcement in position at top and bottom of cells and at intervals not exceeding 192 bar diameters. Splice reinforcement 48 bar diameters, minimum 12".



April 6, 2017

- D. Place mortar in masonry unit bed joints back 1/4 inch from edge of unit grout spaces; bevel back and upward. Permit mortar to cure 3 days before placing grout.
- E. Grout spaces less than 2 inches in width with fine grout using low lift grouting techniques. Grout spaces 2 inches or greater in width with coarse grout using high or low lift grouting techniques.
- F. When grouting is stopped for more than one hour, terminate grout 1-1/2 inch below top of upper masonry unit to form a positive key for subsequent grout placement.
- G. Low Lift Grouting: Place first lift of grout to a height of 60 inches maximum and consolidate by mechanical vibration. Place subsequent lifts in maximum 60 inch increments and vibrate grout for consolidation. Ensure mortar has gained sufficient strength to withstand pressure prior to grouting. "Puddling" may be used in lieu of mechanical vibration if grout lifts are limited to 12 inches maximum.
- H. High Lift Grouting:
  - 1. Provide cleanout opening no less than 4 inches high at the bottom of each cell to be grouted by cutting one face shell of masonry unit.
  - 2. Clean out masonry cells and cavities with high-pressure water spray. Permit complete water drainage. Cells and cavities may be "cleaned" by using steel rod to remove excess mortar protrusions.
  - 3. Request that Architect/Engineer inspect the cells. Allow three days advance notice.
  - 4. After cleaning and cell inspection, seal openings with masonry units.
  - 5. Pump grout into spaces. Maintain water content in grout to intended slump without aggregate segregation.
  - 6. Limit grout lift to 60 inches and mechanically vibrate for grout consolidation. Wait 30 to 60 minutes before placing next lift.

### 3.10 CONTROL AND EXPANSION JOINTS

April 6, 2017

- A. Do not extend horizontal joint reinforcement through control and expansion joints.
- B. Form control joint with a sheet building paper bond breaker fitted to one side of the hollow contour end of the masonry unit. Fill the resultant elliptical core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.
- C. Form expansion joints as detailed.

### 3.11 BUILT-IN WORK

- A. As work progresses, build in metal door and glazed frames, fabricated metal frames, window frames, wood nailing strips, anchor bolts, plates, and other items to be built in the Work furnished by other Sections.
- B. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

### 3.12 TOLERANCES

- A. Maximum Variation from Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Variation from Level Coursing: 1/8 inch in 3 ft. and 1/4 inch in 10 ft.; 1/2 inch in 30 ft.

### 3.13 CUTTING AND FITTING

- A. Cut and fit for chases, pipes, conduit, sleeves, grounds, and other items. Coordinate with other Sections of Work to provide correct size, shape, and location.
- B. Form slots, grooves, chases, recesses, other items required for other trades. Build in all required structural steel, miscellaneous metal, sash anchors, precast concrete anchors, and other items. Bed in mortar to line and level. Build in counter flashing furnished by

April 6, 2017

Roofing Contractor. Check all requirements in advance to eliminate cutting.

- C. Do necessary cutting of masonry for installation of items not otherwise provided for. Patch walls, maintain structural stability, appearance, weather resistance.
- D. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Use full-size units without cutting, where possible. Allow units cut with water-cooled saws to dry before placing, unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

#### 3.14 REPAIRING, POINTING AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or if units do not match adjoining units. Install new units to match adjoining units; install in fresh mortar or grout, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point-up joints, including corners, opening, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for application of sealants.
- C. Remove excess mortar and mortar smears.
- D. Clean soiled surfaces with cleaning solution.
- E. On completion of pointing and re-pointing of all block work, interior and exterior, clean thoroughly with "Sure Klean 600", "Craft Klean" or similar prepared detergent, acceptable to the block manufacturer, applied strictly according to the manufacturer's instructions with stiff fiber brushes. Drench with clean water immediately after cleaning. Do not use job mixed acid on this project. All cleaning shall be done prior to installation of any finished floor, wall mounted light fixtures, aluminum

April 6, 2017

frames or items subject to damage. Protect hollow metal frames, other built-in items.

- F. For cleaning pre-faced units, use masonry detergent cleaners in accordance with manufacturer's directions. Do not use hydrochloric acids or other unbuffered acids. Do not use steel wool or other abrasives.

- G. Waterproofing: Refer to Section 07175.

### 3.15 MASONRY WASTE DISPOSAL

- A. Recycling: Undamaged, excess masonry materials are Contractor's property and shall be removed from the Project site for his use.

END OF SECTION 04300

HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW PROJECT #0215-0038

April 6, 2017

SECTION 04730 - MANUFACTURED STONE VENEER (Stone Veneer & Trim)

PART 1 - GENERAL

1.01 SUMMARY

Section Includes: Calcium silicate building stone units.

Related Sections:

1. 04100-Mortar & Grout
2. 04300-Unit Masonry Work
3. 07175-Water Repellant Coatings
4. 07910-Joint Fillers & Gaskets
5. 07920-Sealants & Caulking

1.02 REFERENCES

A. 2012 MBC Building Code.

B. American National Standards Institute (ANSI)

1. ANSI A118.4 Specifications for Latex-Portland Cement Mortar

C. American Society for Testing and Materials (ASTM):

1. ASTM C 39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
2. ASTM C 67-Test Methods for Sampling and Testing Brick and Structural Clay Tile
3. ASTM C 144-Specification for Aggregate for Masonry Mortar
4. ASTM C 177-Test Method for Steady-State Head Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus
5. ASTM C 190 - Method of Test for Tensile Strength of Hydraulic Cement Mortars
6. ASTM C 207-Specification for Hydrated Lime for Masonry Purposes
7. ASTM C 270-Specification for Mortar for Unit Masonry
8. ASTM C 348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars

April 6, 2017

9. ASTM C 482—Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement
10. ASTM C 567—Test Method for Unit Weight of Structural Lightweight Concrete
11. ASTM C 847—Specification for Metal Lath
12. ASTM C 979—Specification for Pigments for Integrally Colored Concrete
13. ASTM D 226—Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing

#### 1.03 SUBMITTALS

A. Reference Division 1 General Requirements for Submittal Procedures; submit following items:

1. Product Data.
2. Samples:
  - a. Standard sample board consisting of small-scale pieces of veneer units showing full range of textures and colors.
  - b. Full range of mortar colors.
3. Verification Samples: Following initial sample selection submit ``laid-up`` sample board using the selected stone and mortar materials and showing the full range of colors expected in the finished Work; minimum sample size: 3 by 3 feet (1 by 1 m).
4. Quality Assurance/Control Submittals:
  - a. Qualifications:
    - 1) Proof of manufacturer qualifications.
    - 2) Proof of installer qualifications.
  - b. Regulatory Requirements: Evaluation reports
  - c. Veneer manufacturer's installation instructions.
  - d. Installation instructions for other materials

B. Closeout Submittals: Reference Division 1 General Requirements for Closeout Submittals; submit following items:

1. Maintenance Instructions.
2. Special Warranties.

#### 1.04 QUALITY ASSURANCE

April 6, 2017

A. Qualifications:

1. Manufacturer Qualifications: Licensee of Arriscraft International (Or approved equal).
2. Installer Qualifications: Experienced mason familiar with installation procedures for manufactured veneer.

B. Field Sample:

1. Prepare 4 by 4 foot sample at a location on the structure as selected by the Owner's representative. Use approved selection sample materials and colors.
2. Obtain approval from Owner's representative.
3. Protect and retain sample as a basis for approval of completed manufactured stone work. Approved sample may be incorporated into completed work.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Reference Division 1 General Requirements for Product Storage and Handling Requirements.

B. Follow manufacturer's instructions.

1.06 PROJECT/SITE CONDITIONS

A. Environmental Requirements: When air temperature is 40 degrees F (4.5 degrees C) or below, consult local building code for Cold-Weather Construction requirements.

1.07 WARRANTY

A. Special Warranty: Manufacturer's standard warranty coverage against defects in materials when installed in accordance with manufacturer's installation instructions.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Arriscraft International  
Distributed by: General Shale  
3015 Bristol Hwy, Johnson City, TN  
Website: [www.generalshale.com](http://www.generalshale.com)

April 6, 2017

B. Product: French Country - Citadel, full bed stone.

C. Or Approved Equal.

## 2.02 MATERIALS

A. Calcium Silicate Building Stone Units: to ASTM C73, Grade SW; solid units that have been pressure formed and autoclaved; special shapes as indicated; four-size configuration; as follows:

1. Modular Sizes:

a. CIT23: 2-3/8" high, 3-5/8" bed, random lengths.

b. CIT36: 3-13/16" high, 3-5/8" bed, random lengths.

c. CIT52: 5-1/4" high, 3-1/2" bed, random lengths.

d. CIT81: 8-1/8" high, 3-1/2" bed, random lengths.

2. Texture: tumbled finish on exposed faces and ends;

3. Color: French Country Citadel color as selected by Architect;

4. Product and Manufacturer's Name: Citadel® Building Stone by Arriscraft International. (or approved equal)

B. Mortar:

1. Cement: Any cement complying with ASTM C 270.

2. Lime: ASTM C 207.

3. Sand: ASTM C 144, natural or manufactured sand.

4. Pigment: ASTM C 979, mineral oxide pigments.

5. Water: Potable.

6. Pre-Packaged Latex-Portland Cement Mortar: ANSI A118.4.

C. Sealer: Refer to Spec Section 07175.

## 2.03 MORTAR MIXES

A. Standard Installation (Grouted Joints):

1. Mix mortar in accordance with ASTM C 270, Type N or S.

a. Add color pigment in grout joint mortar in accordance with pigment manufacturer's instructions.



April 6, 2017

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates upon which work will be installed.
- B. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates.
- C. Commencement of work by installer is acceptance of substrate.

3.02 PREPARATION

- A. Protection: Protect adjacent work from contact with mortar.
- B. Surface Preparation: Prepare substrate in accordance with manufacturer's installation instructions for the type of substrate being covered.

3.03 INSTALLATION

- A. Install and clean stone in accordance with manufacturer's installation instructions for Standard (Grouted Joint) installation.
- B. Apply sealer in accordance with sealer manufacturer's installation instructions.

3.04 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Manufacturer's Field Service Representative shall make periodic site visits for installation consultation and inspection as requested by Owner.

3.05 CUTTING MASONRY UNITS

- A. Cut masonry units to length with a masonry splitter.
- B. Dress split end to match face when exposed in wall.

3.06 WETTING MASONRY UNITS

April 6, 2017

- A. Where the ambient air temperature exceeds 100°F or exceeds 90°F with a wind velocity greater than 8 mph, pre-wet building stone units.
- B. Lay wetted units when surface dry.

### 3.07 COURSING

- A. Place masonry to lines and levels indicated.
- B. Maintain masonry courses to uniform width. Make vertical and horizontal joints equal and of uniform thickness.
- C. Lay building stone units in random bond pattern, to the following percentage ratio, described from smallest to largest sized units: 20:20:40:20.
- D. Maintain mortar joint thickness of 1/2 inch.
- E. Tool joints by compacting the surface when thumbprint hard, to a [concave] [raked] [flush] finish.

### 3.05 PLACING AND BONDING

- A. Lay masonry in full bed of mortar, properly jointed with other work. Buttering corners of joints, and deep or excessive furrowing of mortar joints are not permitted.
- B. Fully bond intersections, and external corners.
- C. Do not adjust masonry units after laying. Where resetting of masonry is required, remove, clean units and reset in new mortar.
- D. Install lintels as scheduled.
- E. Install wall ties and anchorages as specified in Section 04 05 19.
- F. Install flashings, vents, and masonry accessories as specified in Section 04 05 23.

### 3.08 CLEANING

- A. Reference Division 1 General Requirements for general cleaning specifications.

April 6, 2017

- B. Clean a 100 square foot area of wall designated by Architect as directed below and leave for one week. If no harmful effects appear, all objectionable stains removed and after mortar has set and cured, clean masonry as follows:
1. Protect windows, sills, doors, trim and other work from damage.
  2. Remove large particles with stiff fiber brushes without damaging surface.
  3. Saturate masonry with clean water and flush off loose mortar and dirt.
  4. Dilute cleaning agent with clean water in controlled proportions.
  5. Apply solution to pre-soaked wall surface using [soft-bristled brush] [low pressure acid-resistant sprayer].
  6. Thoroughly rinse cleaning solution and residue from wall surface.
- C. Use alternative cleaning solutions and methods for difficult to clean masonry only after consultation with masonry unit manufacturer.

### 3.09 PROTECTION

- A. Protect units from damage resulting from subsequent construction operations.
- B. Use protection materials and methods which will not stain or damage units.
- C. Remove protection materials upon Substantial Completion, or when risk of damage is no longer present.

END OF SECTION 04730



April 6, 2017

SECTION 06100 - CARPENTRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

- A. The extent of the carpentry work is shown on the Drawings.

1.03 QUALITY ASSURANCE:

- A. Lumber Standard: Comply with U.S. Department of Commerce Product Voluntary Standards PS 1-07, "Structural Plywood", PS 2-04 Performance Standard for "Wood based structural use panels" and PS 20-05 American Softwood Lumber Standard, except as otherwise indicated.
- B. Factory mark each piece of lumber and plywood with type, grade, mill, and grading agency: West Coast Lumber Assoc. (WBLC) or Western Wood Products Association (WWPA).

1.04 SUBMITTALS:

- A. Wood Treatment Data:
  - 1. Submit treatment manufacturer's instructions for proper use of each type of treated material.
    - a. Pressure Treatment: For each type specified, include certification by treating plant stating chemicals and process used, net amount of preservative retained, and conformance with applicable standards.
    - b. For water-borne preservatives, include statement that moisture content of treated materials was reduced to a maximum of 15% prior to shipment to project site.
- B. Product Data:
  - 1. Submit manufacturer's specifications and other data for each carpentry anchorage, fastening, and miscellaneous material. Provide material certificates for all lumber and plywood. Transmit a copy of each instruction to the Installer.

April 6, 2017

1.05 PRODUCT HANDLING:

- A. Delivery and Storage: Keep materials dry during delivery and storage. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber and plywood and provide air circulation within stacks.

1.06 JOB CONDITIONS:

- A. Coordination: Fit carpentry work to other work, scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow proper attachment of other work.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Lumber - General:

- 1. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for the moisture content specified for each use. Use dressed lumber, surfaced four sides (SFS) seasoned with 19% maximum moisture content at time of dressing.

B. Framing Lumber (2" through 4" thick):

- 1. For light framing (less than 6" wide), provide Construction Grade Douglas Fir as graded by the West Coast Lumber Bureau (WCLB) or equivalent species and grade with minimum fiber stress rating (bending) of 1000 psi (Fb), and modulus of elasticity of 1,500,000 psi.
- 2. For structural framing (6" and wider and from 2" to 4" thick) provide dense No. 1 Grade Douglas Fir as graded by the West Coast Lumber Bureau (WCLB) or equivalent species and grade with minimum fiber stress rating (bending) of 1500 psi (Fb), and modulus of elasticity of 1,700,000 psi.

C. Boards (less than 2" thick):

- 1. Produce lumber of 19% maximum moisture content (S-DRY) and of the following species and grade.
  - a. Redwood Construction Common (RIS).
  - b. Southern Pine No. 2 Boards (SPIB).
  - c. Or any species graded construction Boards (WCLB or WWPB).

April 6, 2017

D. Plywood:

1. Provide only Douglas Fir Plywood in accordance with grading requirements of the APA - The Engineered Wood Association as follows:
  - a. Treated non-combustible AC standard with exterior glue.

E. Anchorage and fastening Materials:

1. Select proper type, size, material, and finish for each application. Comply with the following:
  - a. Nails and Staples: FS FF-N-105.
  - b. Wood Screws: FS FF-S-111.
  - c. Bolts and Studs: FS FF-B-575.
  - d. Nuts: FS FF-N-836.
  - e. Washers: FS FF-W-92.
  - f. Lag Screws or Lag Bolts: FS FF-B-561.
  - g. Masonry Anchoring Devices: For expansion shields, nails, and drive screws, comply with FS FF-S-325.
  - h. Toggle Bolts: FS FF-B-588.
  - i. Bar or Strap Anchors: ASTM A 575 carbon steel bars.

2.02 WOOD TREATMENT:

- A. Preservation Treatment: Where lumber or plywood is indicated as "Treated" or is specified herein to be treated, comply with the applicable requirements of the American Wood Preservers Association (AWPA) AWPA P23-08, ASTM D-1625 and Federal Specification TT-W-50.
- B. Pressure-treat above-ground items with water-borne preservatives complying with AWPA P5-09, ASTM D-1760, and Federal Specification TT-W-571. After treatment, kiln-dry to a maximum moisture content of 19%. Treat indicated items and the following, except where fire retardant treated.

April 6, 2017

1. Wood cants, nailers, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
3. Wood framing members less than 12 inches above grade excepting timber.

C. Fire Retardant Treated:

1. Wood blocking and similar items installed within the building shall be pressure impregnation with retardant chemicals to achieve a flame spread rating of not more than 25 when tested in accordance with UL Test 723, ASTM E 84, or NFPA Test 355.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Installer must examine the substrates and supporting structure and the conditions under which the carpentry work is to be installed and notify the Constructor, in writing, of conditions detrimental to the work. Do not proceed with the installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

3.02 INSTALLATION:

A. General:

1. Discard units of material with defects which might impair the quality of the work, and units which are too small to fabricate the work with minimum joints or the optimum joint arrangement.
2. Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted.
3. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required. Provide washers under bolt heads and nuts in contact with wood. Nail plywood in accordance with the recommendations of the APA - The Engineered Wood Association.



April 6, 2017

4. Use common wire nails, except as otherwise shown or specified herein. Use finishing nails for exposed work. Do not wax or lubricate fasteners that depend on friction for holding power. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required. Do not drive threaded friction type fasteners; turn into place. Tighten bolts and lag screws at installation and retighten as required for tight connections prior to closing in or at completion of work.

B. Wood Grounds, Nailers, Blocking and Sleepers:

1. Provide wherever shown and where required for screening or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.
2. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise shown. Build into masonry during installation of masonry work. Where possible, anchor to form work before concrete placement.
3. Provide permanent grounds of dressed, pressure preservative treated key-bevelled lumber not less than 1-1/2" wide and of the thickness required to bring face of ground to exact thickness of finished material involved. Remove temporary grounds when no longer required.

C. Wood Furring:

1. Install plumb and level with closure strips at all edges and openings. Shim with wood as required for tolerance of finished work.

D. Wood Framing:

1. Provide framing members of sizes and on spacings shown and frame openings as shown, or if not shown, comply with recommendations of "The Wood Frame Construction Manual" 2001 Ed. of the American Wood Council. Do not splice structural members between supports.

HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW PROJECT #0215-0038

April 6, 2017

2. Anchor and nail as shown, and comply with the  
"Recommended Nailing Schedule - Table I of the Manual  
for Housing Framing: and other recommendations of the  
N.F.P.A.

E. Installation of Plywood:

1. Comply with recommendations of the American Plywood  
Association (APA) for the installation of plywood.

END OF SECTION 06100

April 6, 2017

SECTION 06402 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
  - 1. Interior standing and running trim and rails.
  - 2. Interior miscellaneous ornamental items.
- B. Related Sections: The following sections contain requirements that relate to this section:
  - 1. Division 6 Section "Rough Carpentry" for furring, blocking, and other carpentry work that is not exposed to view.
  - 2. Division 9 Section "Painting" for final finishing of installed architectural woodwork.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each type of product and process specified in this section and incorporated into items of architectural woodwork during fabrication, finishing, and installation.
- C. Fire-retardant treatment data for material impregnated by pressure process to reduce combustibility. Include certification by treating plant that treated materials comply with requirements.
- D. Shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
  - 1. Factory-applied opaque finishes.

April 6, 2017

- E. Samples for verification purposes of the following:
1. Lumber with or for transparent finish, 50 square inches, for each species and cut, finished on one side and one edge.
  2. Veneer leaves representative of and selected from flitches to be used for transparent finished woodwork.
  3. Wood veneer faced panel products;, with or for transparent finish, 8-1/2 inches by 11 inches, for each species and cut with one half of exposed surface finished, with separate samples of unfaced panel product used for core.
  4. Lumber and panel products with factory-applied opaque finish, 8- 1/2 inches by 11 inches for panels and 50 square inches for lumber, for each finish system and color, with one half of exposed surface finished.
- F. Product certificates signed by woodwork manufacturer certifying that products comply with specified requirements.
- G. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.

#### 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm experienced in successfully producing architectural woodwork similar to that indicated for this Project, with sufficient production capacity to produce required units without causing delay in the Work.
- B. Single-Source Responsibility: Arrange for production by a single firm of architectural woodwork with sequence matched wood veneers.
- C. Single-Source Manufacturing and Installation Responsibility: Engage a qualified Manufacturer to assume undivided responsibility for woodwork specified in this section, including fabrication, finishing, and installation.
- D. Installer Qualifications: Arrange for installation of

April 6, 2017

architectural woodwork by a firm that can demonstrate successful experience in installing architectural woodwork items similar in type and quality to those required for this project.

- E. AWI Quality Standard: Comply with applicable requirements of "Architectural Woodwork Quality Standards" published by the Architectural Woodwork Institute (AWI) except as otherwise indicated.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.
- B. Do not deliver woodwork until painting, wet work, grinding, and similar operations that could damage, soil, or deteriorate woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified in "Project Conditions."

#### 1.6 PROJECT CONDITIONS

- A. Environmental Conditions: Obtain and comply with Woodwork Manufacturer's and Installer's coordinated advice for optimum temperature and humidity conditions for woodwork during its storage and installation. Do not install woodwork until these conditions have been attained and stabilized so that woodwork is within plus or minus 1.0 percent of optimum moisture content from date of installation through remainder of construction period.
- B. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before manufacturing woodwork; show recorded measurements on final shop drawings. Coordinate manufacturing schedule with construction progress to avoid delay of Work.
  - 1. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with manufacture of woodwork without field measurements. Coordinate other construction to ensure that actual dimensions correspond to guaranteed dimensions.

April 6, 2017

PART 2 - PRODUCTS

2.1 HIGH PRESSURE DECORATIVE LAMINATE MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering high pressure decorative laminates which may be incorporated in the work include but are not limited to the following:
- B. Manufacturer: Subject to compliance with requirements, provide high pressure decorative laminates of one of the following:
  - 1. Formica Corp.
  - 2. Laminart.
  - 3. Nevamar Corp.
  - 4. Wilsonart International
  - 5. Arborite - Division of ITW Canada
  - 6. Or approved equal

2.2 MATERIALS

- A. General: Provide materials that comply with requirements of the AWI woodworking standard for each type of woodwork and quality grade indicated and, where the following products are part of woodwork, with requirements of the referenced product standards, that apply to product characteristics indicated:
  - 1. Hardboard: ANSI/AHA A135.4
  - 2. High Pressure Laminate: NEMA LD 3.
  - 3. Medium Density Fiberboard: ANSI A208.2.
  - 4. Particleboard: ANSI A208.1
  - 5. Softwood Plywood: PS 1.
  - 6. Formaldehyde Emission Levels: Comply with formaldehyde emission requirements of each voluntary standard referenced below:
    - a. Particleboard: NPA 8.
    - b. Medium Density Fiberboard: NPA 9.
    - c. Hardwood Plywood: HPM FE.
- B. Fire-Retardant Particleboard: Where indicated, provide panels complying with the following requirements that have

April 6, 2017

fire-retardant chemicals bonded to softwood particles at time of panel manufacture to achieve products identical to those tested for flame spread of 20 or less and for smoke developed of 25 or less per ASTM E 84 by UL or other testing and inspecting organization acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing and inspecting organization.

1. For 45-lb-density panels and thicknesses of 3/4 inch and less, comply with ANSI A208.1 for Grade 1-M-1 except that minimums for modulus of elasticity and screw-holding capacity on face and edge shall be 300,000 psi, 250 lb, and 225 lb, respectively.
2. For 44-lb-density panels and thicknesses of 13/16 inch to 1-1/4 inch, comply with ANSI A208.1 for Grade 1-M-1 except that minimums for modulus of rupture, modulus of elasticity, internal bond, linear expansion, and screw-holding capacity on face and edge shall be 1300 psi, 250,000 psi, 60 psi, 0.50 percent, 250 lb, and 175 lb, respectively.
3. Product: Subject to compliance with requirements, provide "Duraflake FR" by Duraflake Div.; Willamette Industries, Inc.

## 2.3 FABRICATION, GENERAL

- A. Wood Moisture Content: Comply with requirements of referenced quality standard for moisture content of lumber in relation to relative humidity conditions existing during time of fabrication and in installation areas.
- B. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
  1. Corners of cabinets and edges of solid wood (lumber) members less than 1 inch in nominal thickness: 1/16 inch.
  2. Edges of rails and similar members more than 1 inch in nominal thickness: 1/8 inch.
- C. Complete fabrication, including assembly, finishing, and hardware application, before shipment to project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing,

April 6, 2017

trimming, and fitting.

- D. Factory-cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Smooth edges of cutouts and, where located in countertops and similar exposures, seal edges of cutouts with a water-resistant coating.

#### 2.4 FIRE-RETARDANT-TREATED LUMBER

- A. Low-Hygroscopic Formulation: Interior Type A per AWPA C20.
- B. Fire Performance Characteristics: Provide materials identical to those tested for the following fire performance characteristics per ASTM test methods indicated by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify treated lumber with classification marking of inspecting and testing organization in the form of separable paper label or, where required by authorities having jurisdiction, of imprint on lumber surfaces that will be concealed from view after installation.
  - 1. Surface Burning Characteristics: Not exceeding values indicated below, tested per ASTM E 84 for 30 minutes with no evidence of significant combustion.
    - a. Flame Spread: 25.
    - b. Smoke Developed: 50.
- C. Mill lumber after treatment, within limits set for wood removal that does not affect listed fire performance characteristics, using a woodworking plant certified by testing and inspecting organization.
- D. Kiln-dry woodwork after treatment to levels required for untreated woodwork. Maintain moisture content required by kiln drying before and after treatment.
- E. Discard treated lumber that does not comply with requirements of referenced woodworking standard. Do not use twisted, warped, bowed, discolored, or otherwise damaged or defective lumber.
- F. Available Products: Subject to compliance with requirements, products that may be incorporated in the



April 6, 2017

work include but are not limited to the following:

1. Koppers Company, Inc.
2. Osmose Wood Preserving, Inc.
3. Or approved equal.

2.5 STANDING AND RUNNING TRIM AND RAILS FOR TRANSPARENT FINISH

- A. Quality Standard: Comply with AWI Section 300.
- B. Backout or groove backs of flat trim members and kerf backs of other wide flat members, except for members with ends n exposed in finished work.
- C. Assemble casings in plant except where limitations of access to place of installation require field assembly.
- D. Grade: Premium.
- E. Lumber Species: Pine, rough sawn.
- F. Lumber Species: Match species and cut indicated for other types of transparent finished architectural woodwork located in same area of building unless otherwise indicated.
  1. Provide split species on trim that face areas with different wood species, matching each face of woodwork to species and cut of finish wood surfaces in areas finished.

2.6 STANDING AND RUNNING TRIM AND RAILS FOR OPAQUE FINISH

- A. Quality Standard: Comply with AWI Section 300.
- B. Grade: Custom.
- C. Backout or groove backs of flat trim members and kerf backs of other wide flat members, except for members with ends exposed in finished work.
- D. Assemble casings in plant except where limitations of access to place of installation require field assembly.
- E. Lumber Species: Pine, Rough sawn.

2.7 INTERIOR MISCELLANEOUS ORNAMENTAL ITEMS FOR TRANSPARENT FINISH

April 6, 2017

- A. Quality Standard: Comply with AWI Section 700.
- B. Grade: Premium
- C. Lumber Species: Pine, Rough sawn

2.8 INTERIOR MISCELLANEOUS ORNAMENTAL ITEMS FOR OPAQUE FINISH

- A. Quality Standard: Comply with AWI Section 700.
- B. Grade: Custom.
- C. Lumber Species: Eastern white pine, sugar pine, or Idaho white pine, Rough sawn

2.9 FASTENERS AND ANCHORS

- A. Screws: Select material, type, size, and finish required for each use. Comply with FS FF-S-111 for applicable requirements.
  - 1. For metal framing supports, provide screws as recommended by metal framing manufacturer.
- B. Nails: Select material, type, size, and finish required for each use. Comply with FS FF-N-105 for applicable requirements.
- C. Anchors: Select material, type, size, and finish required by each substrate for secure anchorage. Provide nonferrous metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts and anchors, as required, to be set into concrete or masonry work for subsequent woodwork anchorage.

2.10 FACTORY FINISHING OF INTERIOR ARCHITECTURAL WOODWORK

- A. Quality Standard: Comply with AWI Section 1500 unless otherwise indicated.
- B. General: The primary and prefinishing (if any) of interior architectural woodwork required to be performed at factory is specified in this section. Refer to Division 9 Section "Painting" for final finishing of installed architectural woodwork and for material and application requirements of prime coats for woodwork not specified to receive final finish in this section.
- C. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk

April 6, 2017

fasteners, sealing concealed surfaces and similar preparations for finishing of architectural woodwork, as applicable to each unit of work.

D. Transparent Finish for Open-Grain Woods: Comply with requirements indicated below for grade, finish system, staining, effect, and sheen, with sheen measured on 60 deg gloss meter per ASTM D 523.

1. Grade: Premium.
2. AWI Finish System #1: Standard lacquer.
3. Staining: Match Architect's sample.
4. Effect: Closed grain (filled finish).
5. Sheen: Medium-gloss rubbed effect 35-45 deg.

E. Transparent Finish for Closed-Grain Woods: Comply with requirements indicated below for grade, finish system, staining, effect, and sheen.

1. Grade: Premium.
2. AWI Finish System #1: Standard lacquer.
3. Staining: Match Architect's sample.
4. Effect: Closed grain.
5. Sheen: Medium-gloss rubbed effect 35-45 deg.

F. Opaque Finish: Comply with requirements indicated below for grade, finish system, color, effect, and sheen:

1. Grade: Custom.
2. AWI Finish System #9: Standard lacquer.
3. Color: Match Architect's sample.
4. Sheen: Medium-gloss rubbed effect 35-45 deg.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

A. Condition woodwork to average prevailing humidity conditions in installation areas before installing.

April 6, 2017

- B. Deliver concrete inserts and similar anchoring devices to be built into substrates well in advance of time substrates are to be built.
- C. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing.

### 3.2 INSTALLATION

- A. Quality Standard: Install woodwork to comply with AWI Section 1700 for same grade specified in Part 2 of this section for type of woodwork involved.
- B. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 8'-0" for plumb and level (including tops) and with no variations in flushness of adjoining surfaces.
- C. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.
- D. Fire-Retardant-Treated Wood: Handle, store, and install fire-retardant-treated wood to comply with recommendations of chemical treatment manufacturer including those for adhesives where are used to install woodwork.
- E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fastener heads are required, use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork and matching final finish where transparent finish is indicated.
- F. Standing and Running Trim and Rails: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to the greatest extent possible. Stagger joints in adjacent and related members. Cope at returns and miter at corners.
- G. Complete the finishing work specified in this section to whatever extent not completed at shop or before installation of woodwork.

April 6, 2017

- H. Refer to the Division 9 sections for final finishing of installed architectural woodwork.

### 3.3 ADJUSTMENT AND CLEANING

- A. Repair damaged and defective woodwork where possible to eliminate defects functionally and visually; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean woodwork on exposed and semiexposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

### 3.4 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensures that woodwork is being without damage or deterioration at time of Substantial Completion.

END OF SECTION 06402



April 6, 2017

SECTION 07160 - BITUMINOUS DAMPPROOFING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Attention is directed to Division 0, Bidding and Contract Requirements and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

- A. The extent of surfaces to receive bituminous dampproofing is as noted below and/or as shown on the drawings.
- B. Related Work Specified Elsewhere:
  - 1. Section 07200 - Perimeter Insulation, Insulation

1.03 SUBMITTALS

- A. Product Data:
  - 1. Submit 2 copies of manufacturer's specifications, installation instructions and general recommendations for required dampproofing material. Include manufacturer's certification to other data substantiating that the materials comply with the requirements, and are recommended by the manufacturer for the application shown or specified. Indicate by copy of transmittal form that the Installer has received a copy of the instructions and recommendations.

1.04 JOB CONDITIONS:

- A. Do not proceed with dampproofing work until blocking, nailers, piping, conduit and other projections through the substrate have been installed, with substrate properly patched and sealed or flashed to receive the dampproofing.
- B. When ambient temperature is 40 degrees F or less and falling, do not proceed with dampproofing. Do not apply dampproofing materials to frozen substrate or to any substrate in a condition not complying with manufacturer's recommendations.

April 6, 2017

- C. The Installer must examine the substrates and the conditions under which the dampproofing is to be applied and advise the General Contractor in writing of unsatisfactory conditions. Do not proceed with the dampproofing work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

## PART 2 - PRODUCTS

### 2.01 MATERIALS:

- A. Asphalt Compound: Manufacturer's standard asphalt and solvent compound recommended for above-grade interior applications, compounded to penetrate substrate and build to a moisture-resistant, vapor-resistant, firm elastic coating.
  - 1. Provide semi-fibrated type semi-mastic compound FS SS-A-694.
- B. Cold-Applied, Asphalt Emulsion Dampproofing: Asphalt-based emulsions recommended by the manufacturers for dampproofing use when applied according to the manufacturer's instructions and as follows:
  - 1. Trowel Grade: Emulsified asphalt mastic, prepared with mineral-colloid emulsified agents and containing fibers other than asbestos, complying with ASTM D 1227, Type III or IV.
- C. Primer: Asphalt primer complying with ASTM D 41, for asphalt based dampproofing.
- D. Rigid protective boards shall be 1/4 inch thick extruded polystyrene board with a minimum 10 p.s.i. compressive strength. Backfill shall not contain sharp rock or aggregate over 2 inches in diameter.
- E. Odor Elimination For interior and concealed-in-wall uses, provide type of bituminous dampproofing material which is warranted by manufacturer to be substantially odor-free after drying for 24 hours under normal conditions.



April 6, 2017

PART 3 - EXECUTION

3.01 PREPARATION OF SUBSTRATE

- A. Clean the substrate of dirt, oil, loose materials and other substances which interfere with penetration, bond or performance of dampproofing materials.
- B. Prime substrate, except where specifically recommended by manufacturer of dampproofing compound to omit primer; apply type recommended by manufacturer, at rate recommended for condition of substrate.

3.02 INSTALLATION

- A. Apply coating material in accordance with the manufacturer's printed instructions using sufficient quantity to form a continuous unbroken coating over surfaces to be dampproofed. Retouch surfaces as necessary to provide a continuous coating. Protect adjacent surfaces from damage by the dampproofing. Material applied with trowel shall have at least 1/8 inch thickness.
- B. Apply mastic in one coat directly from the container without thinning. Form a cove at the corner junction of surfaces which are coated. Joints, grooved, slots, or breaks in the surfaces shall be completely and continuously covered. Spread coating into chases, corners, reveals, or other surfaces which occur below grade. Reinforce at corners and angles with one additional thickness of membrane.

3.03 COLD-APPLIED, ASPHALT EMULSION DAMPPROOFING

- A. Trowel Grade: Trowel apply a coat of mastic asphalt emulsion dampproofing onto substrate a minimum rate of 7 gal. /100 sq. ft. to produce an average, dry-film thickness of 60 mils, but not less than 30 mils at any point.

3.04 PROTECTION

- A. After the mastic has set and solvents have left the mixture, apply protective board layer over the entire surface of the mastic, holding in place with spots of additional mastic, where wall will not be covered with perimeter insulation.

END OF SECTION 07160



April 6, 2017

SECTION 07175 - WATER REPELLENT COATINGS

PART 1. GENERAL

1.01 RELATED DOCUMENTS

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this specification.

1.02 SECTION INCLUDES

- A. Work included in this Section consists of furnishing all labor, materials, equipment and incidentals required for complete installation of water repellent coatings including clear sealer and all associated accessories mentioned or scheduled on the drawings and/or herein.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 04100 - Mortar and Grout
- B. Section 04300 - Unit Masonry
- C. Section 07920 - Sealants and Caulking

1.04 SYSTEM DESCRIPTION

- A. The exterior coating system shall consist of a liquid-applied, one or two application clear natural looking water repellent sealer.

1.05 QUALITY ASSURANCE

- A. Installation: Applicator of water repellent coating system shall be certified by the manufacturer. Copy of certification shall be submitted with shop drawings.
- B. Application: Test a small area of surface before starting general application to assure desired results and coverage rates. Clear Sealer shall be applied in accordance with manufacturer's written instructions. Apply sealer in two coats with use of recommended spray equipment.

April 6, 2017

1.06 WARRANTY REQUIREMENTS

- A. Provide ten-year warranty under provisions of Division 1, ensuring the water repellent performance of the system from date of acceptance. Provisions of the warranty shall include responsibility for water penetration through peeling and flaking of the coating film.

1.07 SUBMITTALS

- A. Refer to Division 1, General Requirements, for submission procedures.
- B. Submit two samples of masonry units with finished product applied. Masonry shall be from actual units for use on this project. Examination of samples will be for color change only.
- C. Provide eight (8) copies of manufacturer's product data including installation/application instructions.

1.08 PRODUCT HANDLING

- A. Materials shall be delivered to site in original manufacturer's sealed containers.
- B. Materials shall be stored off the ground and in such a manner as to prevent any damage to containers and protect from freezing temperatures.
- C. Sealer shall be thoroughly stirred before and occasionally during use per manufacturer's written instructions.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Maintain temperatures above 50°F. 24 hours prior to application and continuously until sealer has completely dried.
- B. Do not apply sealer if rain is expected within 24 hours of application.

April 6, 2017

PART 2. PRODUCTS

A. MANUFACTURERS:

1. Hydrozo Inc., Clear Double 7.
2. Tamms Industries Co., Chemstop Regular.
3. Rainguard - Blok Lok RTU - Penetrating Water Repellant.
4. Or approved equal.

B. Coatings: Ready mixed, of good flow, spray and brushing properties, capable of drying or curing free of streaks or sags. Materials shall be resistant to fade and efflorescence.

C. Finish: Natural looking, non-textured, clear.

PART 3. EXECUTION

3.01 EXAMINATION & PREPARATION

- A. Verify that substrate conditions and related work performed under other sections are acceptable for installation of work by this trade. Notify General Contractor in writing of substrate conditions not acceptable for proper application of water repellent coating system.
- B. Loose mortar shall be repointed.
- C. Efflorescence shall be cleaned from surface and neutralized with product compatible with water repellent coating system.
- D. Concrete/masonry shall be dry; mortar and caulking fully cured prior to application.
- E. Mask all areas and items adjacent to areas to be coated, including aluminum, wood, glass, shrubs, topsoil and horizontal concrete.

April 6, 2017

3.02 APPLICATION

A. Clear Sealer:

1. Surface receiving sealer must be dry per recommendations of sealer manufacturer.
2. Apply sealer by flooding the surface using manufacturer approved equipment and techniques. Allow excess material to run down a minimum of 12 inches. Follow-up brushing or rolling shall be performed when required by the manufacturer.
3. If required by the manufacturer per conditions encountered, apply second coat 24 hours after the first coat at normal drying conditions.
4. Coverage rates shall be manufacturer's required rates for brick veneer.

3.03 CLEANING

- A. Remove masking from all areas. Mop up puddles from all horizontal surfaces prior to removing masking; do not allow material to runoff masking onto adjacent surfaces.
- B. Clean all areas of splash or overspray per manufacturer's written instructions. Under no circumstances shall product be allowed to dry on surfaces not scheduled to receive the water repellent coating system.
- C. Promptly remove and properly dispose of all empty containers, masking and disposable applicators. Remove all equipment and staging as soon as practicable from job site.

3.04 SCHEDULE

- A. All exterior brick veneer.
- B. All exterior CMU single wythe and veneer.

END OF SECTION 07175

April 6, 2017

SECTION 07200 - INSULATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

- A. The extent of thermal insulation work is shown on the drawings.
- B. The applications of thermal insulation specified in this section include the following:
  - 1. Cavity Wall
  - 2. Rigid foam perimeter edge insulation.
  - 3. Board-type building insulation.
  - 4. Blanket-type building insulation.
  - 5. Miscellaneous insulation
  - 6. Foam Block Cavity Insulation
- C. Related Work Specified Elsewhere:
  - 1. Section 07610 - Standing Seam Metal Roofing
  - 2. Section 07840 - Firestopping: For safing insulation
  - 3. Section 09250 - Gypsum Board: Acoustical batt insulation
  - 4. Section 13341 - Metal Building Systems
  - 5. Division 15, Mechanical: Insulation for ducts, heating, air conditioning, ventilating, and plumbing work shall be furnished and installed by the respective Mechanical Contractor.
  - 6. Division 16, Electrical: Insulation for electrical work shall be furnished and installed by Electrical Contractor.

1.03 QUALITY ASSURANCE:

- A. Thermal Conductivity: The thickness shown are for the thermal conductivity (k-value at 75%) specified for each material. Provide adjusted thicknesses as directed for the equivalent use of material having a different thermal conductivity.

April 6, 2017

- B. Fire Ratings: Comply with the fire-resistance and flammability ratings indicated, and comply with governing regulations as interpreted by authorities including:
  - 1. UL requirements for "Roof Deck Constructions" which are rated "Fire-Acceptable".

1.04 SUBMITTALS:

A. Product Data:

- 1. Submit manufacturer's specifications and installation instructions for each type of insulation required. Include data substantiating that materials comply with specified requirements.

1.05 PRODUCT HANDLING:

- A. Protection from Deterioration: Do not allow insulation materials to become wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation. Protect plastic insulation from exposure to sunlight.
- B. Fire Hazard: Do not deliver plastic insulating materials to the project site ahead of installation time. Protect at all times against ignition. Complete installation and concealment of plastic materials as rapidly as possible in each area of work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Rigid Foam Insulation: Extruded Polystyrene Plastic Board Insulation:

- 1. Cavity Wall Insulation
  - a. Material Properties
    - 1. Rigid closed-cell, polystyrene thermal board insulation.
    - 2. Comply with ASTM C 578-95, Type x, density 1.35 lb/cu. Fet. Min., compressive strength 15 psi (ASTM D 1621-94).
    - 3. Thermal resistance: 5-year aged R-values of 5.4 and 5.0 min. °F-ft<sup>2</sup>-h/Btu<sup>2</sup>/inch at 40°F and 75°F respectively (ASTM C 518-91).
    - 4. Water absorption: Max. 0.1% by volume (ASTM C 272-91 (96)).



April 6, 2017

5. Surface Burning Characteristics:

- i. Flame Spread: 5
- ii. Smoke Developed: 165

b. Thickness: 1'' (R-5)

- c. Acceptable manufacturer's product: The Dow Chemical Company ``STYROFOAM® Brand CAVITYMATE®'' or approved equal.

2. Perimeter Edge Insulation

a. Material Properties:

- 1. Rigid closed cell extruded polystyrene thermal board insulation.
- 2. Comply with ASTM C 578-92, Type VI, density 1.8 lb/cu. ft. min., compressive strength 40 psi (ASTM D 1621-73).
- 3. Thermal resistance: 5-year aged R-values of 5.4 and 5.0 min. °F-ft<sup>2</sup>-h/Btu<sup>2</sup>/inch at 40°F and 75°F respectively (ASTM C 518-91).
- 4. Water absorption: Max. 0.3% by volume (ASTM C 272-91).

b. Thickness: 2'' unless otherwise indicated.

- c. Acceptable manufacture's product: Dow Chemical Company ``SYTROFOAM® Brand High Load (HI-40)'' material, or approved equal.

B. Glass Fiber Board Insulation:

- 1. Glass fibers and water-resistant binders formed into rigid, non-combustible boards complying with FS HH-I-558, Form A; thermal conductivity (k-value at 75 degrees F.) of 0.26; manufacturer's standard lengths and widths, unless otherwise shown.

- a. Provide "CWE Type FRK Faced Board by Owens-Corning Fiberglass Corp." or approved equal.

C. Mineral/Glass Fiber Blanket/Batt Insulation:

- 1. Unfaced Mineral Fiber Blanket/Batt Insulation: Thermal insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C665 for type described below with

April 6, 2017

thermosetting resins to comply with ASTM C665 for Type 1 (blankets without membrane facing); and ASTM E136 and as follows:

- a. Mineral Fiber Type: Fibers manufactured from glass.
  - b. Surface Burning Characteristics: Maximum flame spread and smoke developed values of 25 and 50, respectively.
2. Batt insulation shall be foil faced (to comply with ASTM C665, Type III Class B & C) when exterior wall or ceiling is not indicated to receive a separate vapor barrier. Locations with vapor barrier shall be unfaced. Provide batt insulation equal to or exceeding the "R" values for the following nominal indicated insulation thicknesses.
- a. "R" = 11 for 3-1/2 inches thick insulation
  - b. "R" = 19 for 6-1/4 inches thick insulation
3. Foil-Faced, Glass Fiber Board Insulation: Thermal insulation combining glass fibers with thermosetting resin binders and faced on one side with foil-scrim-kraft or foil-scrim-polyethylene vapor retarder to comply with ASTM C612, Type 1A or Type 1A or 1B, and with other requirements indicated below:
- a. Nominal density of 2.25 lb./cu. ft., thermal resistivity of 4.3 degrees F. by high by sq. ft./BTU by inch at 75 degrees F.

D. Block fill insulation:

1. Polymaster R-501 foamed in place insulation or approved equal.

E. Miscellaneous Insulation: Shall be inorganic (nonasbestos) mineral wool insulation without facing, for the purpose of filling and stuffing openings in walls around pipes, structural components, windows, conduits, expansion joints to eliminate noise transfer and to insulate. Use to seal top of interior walls, except fire rated walls, between masonry and roof deck or where indicated. Use at expansion joints as detailed. Insulation shall have a flame spread rating of 15 or less, and a smoke development rating of 0; per ASTM E84.

2.02 AUXILIARY INSULATING MATERIALS

April 6, 2017

- A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of thickness indicated, securely in position indicated with self-locking washer in place; and complying with the following requirements:
1. Plate: Perforated galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
  2. Spindle: Copper-coated low carbon steel, fully annealed, 0.105 inches in diameter, length to suit depth of insulation indicated.
  3. Insulation-Retaining Washers: Self-locking washers formed from 0.016 inch thick galvanized steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches square or in diameter.
    - a. Where spindles will be exposed to human contact after installation, protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap.
  4. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates.
  5. Products: Subject to compliance with requirements, provide one of the following:
    - a. Adhesively attached, spindle type anchors
      1. TACTOO Insul-Hangers; AGM Industries, Inc. Canton, MA
      2. Spindle Type Gemco Hangers; Gemco, Danville, IL
      3. Or approved equal.
    - b. Insulation - Retaining Washers
      1. RC150; AGM Industries Inc, Canton, MA
      2. R150; Gemco, Danville, IL
      3. Or approved equal.
    - c. Adhesive
      1. TACTOO Adhesive; AGM Industries, Inc. Canton, MA
      2. Tuff Bond Hanger Adhesive; Gemco, Danville, IL
      3. Or approved equal.
  6. Adhesive for Rigid Foam Perimeter Edge Insulation:
    - a. Adhesive: Type recommended by insulation manufacturer.

April 6, 2017

- b. Acceptable manufacturer's products:
  - 1. ChemRex, Inc. ``Contech Brands PL300 Foam Board Adhesive``.
  - 2. ChemRex, Inc. ``Contech Brands Premium Foam Board Adhesive``.
  - 3. Dacar Products, Inc. ``Foamgrab PS``
  - 4. Or approved equal.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. The Installer must examine the substrate and conditions under which the insulation work is to be performed, and notify the General Contractor in writing of unsatisfactory conditions. Do not proceed with the insulation work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.02 INSULATION:

A. General:

- 1. Comply with manufacturer's instructions for the particular conditions of installation in each case. If printed instructions are not available or do not apply to the project conditions, consult the manufacturer's technical representative for specific recommendations before proceeding with the work.
- 2. Extend insulation full thickness as shown over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections which interfere with placement.
- 3. Apply a single layer of insulation of the required thickness unless otherwise shown or required to make up the total thickness.

B. Perimeter Insulation:

- 1. On vertical surfaces, set units in adhesives applied in accordance with manufacturer's instructions. Use type adhesive recommended by manufacturer of insulation.

C. General Building Insulation:

- 1. Apply insulation units to the substrate by the method indicated, complying with the manufacturer's

April 6, 2017

recommendations. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage, to provide permanent placement and support of units.

2. Set vapor barrier faced units with vapor barrier to warm side of construction, except as otherwise shown. Do not obstruct ventilation spaces, except for firestopping.
  - a. Tape joints and ruptures in vapor barriers, using adhesive tape of type recommended by insulation manufacturer, and seal each continuous area of insulation to surrounding construction so as to ensure vapor-tight installation of the units.
3. Stuff loose mineral fiber insulation into miscellaneous voids and cavity spaces as indicated. Compact to approximately 40% of normal maximum volume (to a density of approximately 2.5 lbs. per cu. ft.).

END OF SECTION 07200



April 6, 2017

SECTION 07310 - SHINGLE ROOFING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

- A. The extent of roofing is shown on the drawings and include related metal flashing, edge drips, and ridge vents.

1.03 QUALITY ASSURANCE:

- A. Installer: A firm with 3 years of prior successful experience with installation of roofing of type and scope equivalent to work of this section.
- B. Comply with the requirements of local and state building codes.
- C. SMACNA Details: Except as otherwise shown or specified, comply with applicable recommendations and details of "Architectural Sheet Metal Manual" by SMACNA. Conform to dimensions and profiles shown.

1.04 SUBMITTALS:

- A. Product Data:
  - 1. Submit 2 sets of samples to show the full range of exposed color and texture to be expected in the completed work. Architect's review will be for color and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Store and handle in accordance with manufacturer's recommendations.

April 6, 2017

1.06 JOB CONDITIONS:

- A. Do not apply roofing including underlayment when substrate is wet.
- B. Do not apply shingles when air temperature is below 40 degrees F.

1.07 WARRANTY:

- A. Lifetime limited transferable warranty with 130 mph limited wind warranty.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Roof Shingles:

- 1. Three-Dimensional Fiberglass Laminated Strip Shingles: Mineral surfaced, self-sealing, laminated, multi-ply overlay construction, fiberglass based, strip asphalt shingles complying with ASTM D 3018, Type 1 and D3462. Provide shingles bearing UL Class "A" external fire exposure label and Wind Resistant test requirements of ASTM D3161 (Type 1). Color as selected by Architect.
- 2. Products: Subject to compliance with requirements, provide the following:
  - a. "Timberline HD; GAF Corporation, or approved equal.

B. Ridge Shingles:

- 1. Use factory precut units (TimberTex, or approved equal).

C. Underlayment:

- 1. Provide 1 layer of "ice and water shield" protection membrane as shown on drawings.
- 2. Ensure that all existing nail heads are totally flush with the existing wood roof deck.

D. Fasteners:

- 1. Nails: Hot galvanized or aluminum 11 or 12 ga. barbed shank, 3/8" head, sharp pointed conventional or



April 6, 2017

sufficient length to penetrate through plywood sheathing.  
Staples will not be allowed.

E. Flashing:

1. Zinc-Coated Steel: Provide commercial quality carbon steel sheets with minimum of 0.20% copper complying with ASTM A 526, except provide ASTM A 527 where lock-forming is required; hot dip galvanized to comply with ASTM A 525, designation G90. Use for counter flashing and closure.
2. Sheet Aluminum: Except as otherwise indicated, provide manufacturer's standard aluminum sheet recommended for general flashing applications ASTM B209; alloy 3003; temper H14; thickness indicated or, if not otherwise indicated, 0.032" (20 B & S gage).
  - a. Form flashing (to profiles indicated on drawings, and as required) to protect roofing materials from physical damage and shed water.
  - b. Provide drip edge flashing where indicated and where required, preformed of .03 inch aluminum.
    1. Color finish: Metal shall be thoroughly cleaned and pretreated before application. Exposed to view surfaces shall be finished with fluorocarbon coating containing a minimum of 70 percent Kynar 500 resin, 1 mil thick. Custom color shall be Architect selected. A 20 year limited warranty against failure of the finish shall begin when the job is complete.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Inspect roof to insure that work penetrating roof surface has been completed to the extent that roofing can be applied.
- B. Examine surface to receive tiles to assure they are rigidly supported, even, and clean.
- C. Do not apply materials over wet roof sheathing.

April 6, 2017

- D. Do not proceed with installation until defects are corrected.

### 3.02 INSTALLATION

#### A. Flashing:

1. Provide metal drip edge at all edges of roof.

#### B. Roof Shingles:

1. First Course: Start with a full shingle even with starter course.
2. Second Course: Offset second shingle to the 4-1/2" alignment notch in the first course shingle.
3. Third Course: Offset third shingle to the 7-1/2" alignment notch in the second course shingle.
4. Succeeding Courses: Continue this pattern or any combination of these offsets, to achieve a random appearance.
5. For horizontal alignment, place butt of above shingle at top of 6" horizontal cut out.
6. Fastening Instruction: Place one fastener 1" from each end of shingle and one 12" from each end, four fasteners in each shingle. All four fasteners must be placed in the fastening line.

END OF SECTION

April 6, 2017

SECTION 07466 - FIBER CEMENT SIDING

PART I - GENERAL

1.01 Work Included

- A. Siding panels.
- B. Soffit panels.
- C. Accessories and trim.

1.02 Related Sections

- A. Section 06100 - Rough Carpentry: Framing and Sheathing.
- B. Section 07900 - Joint Sealers.

1.03 References

- A. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants; 1998.
- B. ASTM C 1185 - Standard Test Methods for Sampling and Testing Non-Asbestos Fiber-Cement Flat Sheet, Roofing and Siding Shingles, and Clapboards; 1999.
- C. ASTM C 1186 - Standard Specification for Flat Non-Asbestos Fiber Cement Sheets; 1999.
- D. ASTM E 72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction; 1998.
- E. ASTM E 84 -- Standard Test Method for Surface Burning Characteristics of Building Materials; 1999.

April 6, 2017

- F. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials; 1995.
- G. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 1999.
- H. ASTM E 228 - Standard Test Method for Linear Thermal Expansion of Solid Materials With a Vitreous Silica Dilatometer; 1995. 07466-1
- I. ASTM G 26 - Standard Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials; 1996.

#### 1.04 Submittals

- A. Make submittals under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods, including nailing patterns.
  - 4. Applicable model code authority evaluation report (ICBO, BOCA, CCMC, etc.)
- C. Siding manufacturer's requirements for vapor retarders, primer, paint, etc., to be installed by others.
- D. Maintenance and periodic inspection recommendations.

#### 1.05 Quality Assurance

- A. Installer: Provide installer with not less than three years of experience with products similar to those specified.

#### 1.06 Delivery, Storage, And Handling

April 6, 2017

- A. Store products off the ground, on a flat surface, and under a roof or separate waterproof covering.

#### 1.07 Warranty

- A. Register manufacturer's warranty, made out in Owner's name, with copy to Owner.

### PART 2 PRODUCTS

#### 2.01 Manufacturer

- A. James Hardie 231 S. LaSalle St., Suite 2000  
Chicago, Illinois 60604. Tel: (888)542-7373.  
[www.jameshardie.com](http://www.jameshardie.com).
- B. Or approved equal.

#### 2.02 Panels

- A. Pre-Finished Fiber Cement Board Panels h25 with Color plus technology- General: Cement and cellulose fiber formed under high pressure into boards with integral surface texture; complying with ASTM C 1186 Type A Grade II; machined edges; for nail attachment.
  - 1. Surface Burning Characteristics: Flame spread index of 0, smoke developed index of 6, maximum; when tested in accordance with ASTM E 84 (Class I/A).
  - 2. Flammability: Noncombustible, when tested in accordance with ASTM E 136. 07466-2
  - 3. Flexural Strength: At least 1450 psi (10 MPa) when in equilibrium condition, and at least 1015 psi (7 MPa) when in wet condition, tested in accordance with ASTM C 1185.
  - 4. Coefficient of Thermal Expansion: Less than  $1 \times 10^{-5}$ /inch/inch/degree F ( $0.5 \times 10^{-5}$ /degree C), when tested in accordance with ASTM E 228.
  - 5. Water Vapor Transmission: Less than 7.0 perm-inch (10 ng/(Pa s m), when tested in accordance with ASTM E 96.

April 6, 2017

6. Freeze Thaw Resistance: At least 80 percent flexural strength retained, when tested in accordance with ASTM C 1185.
  7. UV Resistance: No cracking, checking, or erosion, when tested for 2000 hours in accordance with ASTM G 26.
  8. Water Tightness: No water droplets on underside, when tested in accordance with ASTM C 1185.
- B. Vertical Board and Batten Siding: HardiePanel Vertical Siding, FiberCement Siding.
1. Thickness: 5/16 inch (8 mm), nominal.
  2. Length: 8 feet nominal.
  3. Style: Cedarmill Board and Batten siding.
  4. Width: 4 feet wide.

## 2.03 Accessories

- A. Trim: Fiber cement board, cut from siding material; cut edges primed.
- B. Provide the following trim:
  1. Batten trim
  2. Starter strip for lap siding.
  3. Outside corners, butted to siding.
  4. Outside corners, overlapping siding.
  5. Fascia board.
- C. Sealant: Paintable, 100 percent acrylic latex caulk complying with ASTM C 920.
- D. Sheet Metal Flashing: Minimum 26 gauge hot-dipped galvanized steel sheet, or aluminum.
- E. Nails: Length as required to penetrate minimum 1-1/4 inch ( 32mm) into solid backing; hot-dipped galvanized or stainless steel.
- F. Building Paper: Kraft or bituminous paper; not polyethylene or foil.
- G. Pre-finishes.

April 6, 2017

## PART 3 EXECUTION

### 3.01 Examination

- A. Prior to commencing installation, verify governing dimensions of building and condition of substrate.

### 3.02 Preparation

- A. Examine, clean, and repair as necessary any substrate conditions that would be detrimental to proper installation.
- B. Do not begin installation until unacceptable conditions have been corrected.

### 3.03 Installation

- A. Install in accordance with manufacturer's instructions and drawing details.
  - 1. Read warranty and comply with all terms necessary to maintain warranty coverage.
  - 2. Install in accordance with conditions stated in model code evaluation report applicable to location of project.
  - 3. Use trim details indicated on drawings.
  - 4. Touch up all field cut edges before installing.
  - 5. Pre-drill nail holes if necessary to prevent breakage.
- B. Over Wood Studs Without Sheathing: Install building paper over studs prior to installing siding.
- C. Over Wood and Wood-Composite Sheathing: Fasten siding through sheathing into studs.
- D. Over Foam Sheathing: Read and comply with sheathing manufacturer's recommendations.
  - 1. For sheathing of 1 inch (25 mm) thickness or less, nail through sheathing into studs using correspondingly longer nails.

April 6, 2017

2. For sheathing over 1 inch (25 mm) thickness, install furring strips over studs and fasten siding through furring and into studs.
- E Over Masonry Walls: Install furring strips of adequate thickness to accept full length of nails and spaced at 16 inches (406 mm) on center.
- F. Over Steel Studs: Minimum 20 gauge steel, 3 5/8. (92 mm) C-studs. Use 1-5/8. (41 mm) long, #8-18 x 3/8. HD self-tapping, corrosion-resistant ribbed bugle head screws. Attach siding at each stud insuring that at least 3 screw threads penetrate the studs.
- G. Diagonal Siding: Follow manufacturer's instructions.
- H. Allow space between both ends of siding panels that butt against trim for thermal movement; seal joint between panel and trim with exterior grade sealant.
- I. Joints in Horizontal Siding: Avoid joints in lap siding except at corners; where joints are inevitable stagger joints between successive courses.
- J. Joints in Vertical Siding: Install Z-flashing in horizontal joints between successive courses of vertical siding.
- K. Furred Installation: Leave space at top and bottom open; top may be behind soffit; at bottom install insect screen over opening by wrapping a strip of screen over bottom ends of vertical furring strips.
- L. Install sheet metal flashing above door and window casings and horizontal trim in field of siding.
- M. Do not install siding less than 6 inches (150 mm) from surface of ground nor closer than 1 inch (25 mm) to roofs, patios, porches, and other surfaces where water may collect.



April 6, 2017

- N. After installation, seal all joints except lap joints of lap siding. Seal around all penetrations. Paint all exposed cut edges.
- O. Finish Painting: Pre-Finished.

3.04 Cleaning

- A. At completion of work, remove debris caused by siding installation from project site.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION



April 6, 2017

SECTION 07610 - STANDING SEAM METAL ROOFING SYSTEM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.
- B. Furnish and install roofing panels, fasteners, clips, downspouts, flashings, closures, insulation, snow guards, ice and water shield, vapor barrier, sheathing, gutters and miscellaneous accessories required to complete the roofing enclosure as indicated on the contract drawings.

1.02 DESCRIPTION OF WORK:

- A. The extent of the standing seam metal roofing system is shown on the drawings.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Insulation Section 07530

1.04 QUALITY ASSURANCE:

- A. Manufacturer Qualifications:
  - 1. The manufacturer shall have had at least fifteen (15) years experience in architectural roofing design and installation. The manufacturer shall have a permanent, stationary, indoor production facility.
  - 2. The manufacturer shall submit the names and addresses of five (5) previous standing seam metal roofing projects of comparable size, scope, and complexity.
- B. Installer Qualifications:
  - 1. The installer shall have had a minimum of five (5) years experience in the installation of metal roofing.

April 6, 2017

2. The installer shall submit the names and addresses of five (5) previous standing seam metal roofing projects of comparable size, scope, and complexity.

1.05 REFERENCE LATEST EDITIONS OF PUBLICATIONS AND STANDARDS

- A. Building Design Codes – Uplift, Live and Dead Loads
  1. ASCE Standards, Minimum Loads for Buildings and Other Structures, American Society of Civil Engineers (ASCE).
  2. International Building Code as amended by the State of Michigan.
  3. N.F.P.A.
- B. Reference Standards
  1. American Iron and Steel Institute (AISI). Specification for the Design of Cold-Formed Steel Structural Members (Aug. 1986).
  2. American Institute of Steel Construction (AISC) Manual of Steel Construction (Current Edition).
  3. American Society for Testing and Materials (ASTM) (Current Edition).
    - a. E 1592, "Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference".
    - b. A 653 standard specification for steel sheet, zinc-coated (galvanized) by the hot-dip process.
    - c. E 1680 Test for Rate of Air Leakage through Exterior Metal Roof Panel Systems.
    - d. E 1646 Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
  4. Factory Mutual
- C. Underwriters Laboratories (UL)
  1. Building Materials Directory (current issue).
  2. Fire Resistance Directory (current issue).

1.06 SUBMITTALS

- A. Provide the following upon request of the Architect.
  1. Submit the following test reports, certified by an independent testing laboratory or an independent professional engineer, to verify that the proposed roofing will meet performance requirements of this specification.
    - a. Thermal Cycle Test.
    - b. ASTM E 1592, "Standard Test Method for Structural

April 6, 2017

Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference" test results.

- c. Clip Fastener Pull-Out Tests and Calculations.
  - d. UL 580 Class 90 Test Data.
  - e. FM approval Std. 4471 for Class 1 Panel Roofs.
  - f. Concentrated Load Test Data.
  - g. Air Infiltration (E 1680) and Water Penetration E 1646) Test Results.
  - h. Coating Performance Testing.
- 2. A certified statement from the manufacturer attesting to a minimum of fifteen (15) years' experience with roofing systems.
  - 3. A letter from the manufacturer listing installers that are qualified to erect the manufacturer's material.
  - 4. A letter from the installer per QUALITY ASSURANCE.
  - 5. Color samples from full line of manufacturers color samples.
- B. With the proposal:
- 1. Qualifications and/or exceptions to the drawings and specifications.
- C. Prior to fabrication:
- 1. Shop drawings consisting of catalog cuts, design and erection drawings, finish specifications, and other data necessary to clearly describe design, materials, sizes, layouts, construction details, fasteners, and erection. Submit small scale layouts of panels and large scale details of edge conditions, joints, fastener and sealant placement, flashings, penetrations and curbs, and special details. Distinction must be made between factory and field assembly work. Drawings must be approved before fabrication can begin.
  - 2. Erection procedures and instructions submitted with drawings.
  - 3. Performance Requirements - Submit structural design calculations and test reports certified by a registered professional engineer to verify load-carrying capacities of panel system, fasteners, and expansion control calculations.
  - 4. Furnish certified laboratory test reports showing that the specified system has been tested and conforms to applicable provisions specified herein.
  - 5. Certification by the manufacturer that the roofing assembly has been successfully tested under both UL 580 & FM procedures and has achieved a Class 90 rating.
  - 6. Samples and descriptive data:

April 6, 2017

- a. Roof panel: Full panel width, 12 inches (305 mm) long.
  - b. Anchor clips: Two required.
  - c. Fasteners: Two of each type to be used, with a statement regarding intended use.
  - d. Closures: One metal closure with foam filler.
  - e. Insulation: 12 inches (305 mm) square, full thickness.
  - f. Sealant: One sample of each sealant, with a statement regarding intended use.
- D. Design wind loads are as follows:
- |              |        |
|--------------|--------|
| Field        | 26 psf |
| End          | 44 psf |
| Ridge / Eave | 44 psf |
| Corners      | 66 psf |

#### 1.07 WARRANTY

- A. Provide a minimum 10 year manufacturer warranty for material and installation of entire standing seam roof system.
- B. Finish warranties shall be the paint manufacturer's standard 20 year warranty.

#### PART 2 - PRODUCTS

##### 2.01 ACCEPTABLE MANUFACTURERS:

- A. Manufacturers
  - 1. Atas International
  - 2. Peterson PAC-CLAD
  - 3. Or approved equal
- B. Applicator: Certified installers with roofing manufacturer and in good standing.
- C. Being listed a pre-qualified manufacturer does not release the manufacturer from providing complete and acceptable windload, thermal, and other performance data.

##### 2.02 PRODUCT PERFORMANCE:

- A. Tests shall have been conducted or witnessed by a recognized independent laboratory or independent professional engineer.

April 6, 2017

- B. The standing seam panel system shall be designed to safely resist the positive and negative loads of the roofing system.
- C. Structural-uniform uplift load capacity of the panel system shall be determined in accordance with test procedures defined in ASTM E 1592, "Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference" as follows:
  - 1. The Factor of Safety on the test results shall be 1.65 for the panel, batten or clip ultimate loads, with no increase for wind.
  - 2. The Factor of Safety for fasteners shall be 3.0 for one single fastener per clip, 2.25 for two fasteners per clip and 4.0 in masonry.
    - a. Design uplift capacity for conditions of gage, span or loading other than those tested may be determined by interpolation of test results. Extrapolation of conditions outside the range of the tests is not acceptable.
    - b. Deflection shall be  $L/180$  for positive loading.
- D. Water penetration of the panel side joint at 20 psf (.96 kPa) pressure for 15 minutes shall be "no uncontrollable leakage" when tested in accordance with ASTM Test Procedure 1646.
- E. Air infiltration of the panel side joint at 20 psf (.96 kPa) pressure shall be no more than 0.0156 cfm/ft<sup>2</sup> (0.079 L/s/m<sup>2</sup>) of panel when tested in accordance with ASTM Test Procedure E 1680.
- F. Panels shall be thermal cycle tested a minimum of 100,000 cycles with a minimum of two (2) inches (50 mm) of movement relative to the clip anchor. Panels and clips shall show that the wear will not affect structural performance or weather tightness of the system.
- G. The panel system shall have both Factory Mutual Approval Std. 471 for Class 1 Panel Roofs and UL 580 Class 90 ratings. The manufacturer shall have a permanent, stationary, indoor production facility available for regular UL Inspections.
- H. The panels shall withstand a 250 lb. concentrated load applied to a four (4) square inch area at the center of the panel at mid-span between supports with no panel deformation, rib buckling, or panel sidelap separation

April 6, 2017

which will diversely affect the weather tightness of the system.

2.03 PRODUCT APPLICATION:

- A. Roll forming of panels at the jobsite, if selected, must be performed with manufacturer owned and relocatable industrial type rolling mill having a minimum of twelve (12) stands to gradually shape the sheet metal. Installer owned or rented roll formers are not acceptable.
- B. Fasten roof (and fascia) panels to the framing members or deck with concealed anchor clips designed to allow for thermal movement of the panels except where specific fixed points are required.
- C. There shall be no exposed fasteners except to fasten flashings at fixing points, eaves, hips, ridges, rakes, laps, or as indicted on the drawings.

2.04 MATERIALS:

- A. Metal Panels - 16"-18" Standing Seam Roofing System.
  - 1. Fabricate metal panels from 24 ga. Galvanized (.0396 nom.)
    - a. G-90 (Z275) galvanized steel conforming to ASTM A653 (A 653M) Structural Quality Grade 504 and ASTM A924 (A 924M).
  - 2. Panels shall be a minimum of 16-18 inches (457 mm) wide with longitudinal stiffening elements located in the pan to minimize oil-canning.
    - a. The panel system shall be designed as a true standing seam shape.
- B. Seam
  - 1. Mechanically seamed 2 inch double lock with sealant.
- C. Concealed Clips
  - 1. Fasten standing seam roofing to framing members with minimum 16 gage [0.59" (1.50 mm)], G-90 (Z275) Galvanized Steel. A 653 (A 653M) Grade 50, concealed fastening one-piece clips.
  - 2. One-piece clips shall provide for unlimited, unimpeded panel movement confirmed by testing, certified by an independent professional engineer. The testing shall require 100,000 cycles with 2 inch (51 mm) minimum panel movement in relation to the anchored clip.



April 6, 2017

- D. Panning of panel ends is required at ridge, hip and headwall conditions when the slope is less than 3:12.
- E. Finish - The coating system shall have been performance tested in accordance with ASTM procedures
  - 1. Exterior Panels - Duragard (Polyvinylidene Fluoride) shall accept a 0.8 + 0.05 mil primer coat on both sides with a 0.8 + 0.05 mil 70 percent Hylar 5000 or 70 percent Kynar 500 color top coat. The exterior color shall be selected by Owner from Manufacturer's standard color selection.
- F. Flashing - All flashing shall be of the same material, gage, finish, and color as the panels unless otherwise indicated.
- G. Accessories
  - 1. Fasteners
    - a. Screws shall be No. 14 diameter self-tapping type with a 5/8 inch (16 mm) diameter combination steel and Neoprene "Permaseal" washers.
      - 1) Exposed screws shall be 300 series stainless steel, color finished to match panel.
      - 2) Concealed screws shall be 300 series stainless steel.
    - b. Blind rivets shall be solid-threaded sealed-seam type and have a weathertight neoprene washer under the head. Exposed rivets color finished to match panel.
  - 2. Closures
    - a. Precut profile closure shall be cut from cross-linked, closed-cell foam.
    - b. All ridge and hip foam closures shall be protected and supported by a formed metal closure manufactured from the same material, color and finish as the roofing.
    - c. Ridge closures shall be factory fabricated and hip closures shall be field cut
  - 3. Sealants
    - a. Must not contain oil, asbestos or asphalt.
    - b. Factory-applied sidelap sealant: Non-skinning, non-hardening, non-oxidizing butyl sealant, designed for metal-to-metal concealed joints.
    - c. Field-applied panel end sealant: Extruded polymeric butyl tape, non-skinning and not easily displaced under compression.
    - d. Exposed sealant: One component, skinning, polyurethane joint sealant. Color to be

April 6, 2017

- coordinated with that of panel.
4. Thermal Barriers shall be:
    - a. Non-treated wood per manufacturer's recommendations.
  5. Round Penetrations - Premolded EPDM boot with metal collar. Dek-Tite by Buildex or approved equal.
  6. Snowguards - Fabricate from 1-1/2 inch x 2 inch x 3/16 inch (38mm x 51mm x 4.8mm) Steel Angle 6061-T6. Vertical leg factory notched for vertical panel legs. Fasteners for the compression clamp attachment shall be 1/14 inch (6.4mm) diameter stainless steel bolts, nuts and washers. Shop paint angles to match roofing color.
  7. Vapor Retarder - Shall have a permeance of 0.05 or less as determined per ASTM E 96. Vapor retarder to be 6 mil minimum reinforced vinyl and placed on sheathing.
  8. Insulation - Provide rigid board polyisocyanurate insulation in two 2" layers. Laps to be staggered per manufacturer's instructions. Total R value to be R=20.
  9. Sheathing - Provide sheathing over rigid insulation. Sheathing to be 5/8" exterior grade plywood.
  10. Ice and water shield - Provide 30 mil peel and stick ice and water shield equal to Grace. Place over entire roof surface.
  11. Commercial gutter system will be supported and braced by SRS 3 Rib Extensions System. Gutters and downspouts to be from same material, gage and finish as roof panels and to be furnished and installed as shown on plans.
- H. Fascias
1. Fascia panels to be same panel as roof with ribs aligned to match roof ribs.
    - a. Use same clips, fasteners and underlayment as roof.
    - b. Provide trim for fascias from same material as roof and install per details on plans

### PART 3 - EXECUTION

#### 3.01 DELIVERY AND STORAGE:

- A. Materials shall be delivered to the site in a dry and undamaged condition and unloaded per the manufacturer's instructions. The installer shall inspect materials for damage and stains upon arrival to the site. Materials shall be stored out of contact with the ground in weathertight coverings to keep them dry per the manufacturer's recommendations. Storage accommodations shall provide good air circulation and protection from surface staining.

April 6, 2017

3.02 INSPECTION:

- A. The installer shall examine the building to verify that the structure is ready for roofing installation.
- B. Field-check dimensions and check support alignment with a taut string or wire; support misalignment will cause panel "oil-canning" and potentially restrict panel movement.
- C. Do not proceed until unsatisfactory conditions are corrected.

3.03 INSTALLATION:

- A. Install roofing system in accordance with the approved erection drawings and manufacturing instructions.
- B. All attachments shall allow for thermal expansion and contraction of the roofing panels.
- C. Install panels in one continuous length from ridge to eave.
- D. Mechanically seam before workers can stand on the panels.
- E. Seal the top and bottom of metal closures with butyl tape [7/8 inch x 1/8 inch (22mm x 3mm)] and sealant.
- F. Seam panels together with electric powered seaming machine supplied by the manufacturer to ensure sidelap weather tightness.
- G. Protect installed panels from abuse by other trades. The Construction Manager shall be responsible for protecting the roofing from wet cement, plaster and painting operations. The installer shall provide walk boards in heavy traffic areas to prevent damage to the panels.
- H. Snowguards - Install snowguards as shown on manufacturer details. Snowguards will not be attached to roof panels in any manner that penetrates the roof. Snowguards must be located within 6 inches (150mm) of panel clips.
- I. Vapor Retarder - When used over sheathing, shall be installed per the manufacturer's instructions. Any breaks or tears shall be repaired before panels are installed.
- J. Ice and water shield to be installed over entire roof.

April 6, 2017

3.04 DAMAGED MATERIAL AND CLEANING:

- A. Replace panels and other components of work which have been damaged beyond repair by means of finish touch-up or similar minor repair.
- B. To prevent rust staining, remove immediately from finished surfaces any filings caused by drilling or cutting.
- C. Wipe down each area after erection is complete for final acceptance.

END OF SECTION 07610

April 6, 2017

SECTION 07620 -METAL FLASHING / TRIM / ROOF ACCESSORIES

PART 1 - GENERAL

1.01 Work Included

- A. Metal flashing and counter flashings.
- B. Valleys, sumps and scuppers.
- C. Gravel stops, fascias and trim.
- D. Counter flashings at roof mounted mechanical equipment and vent stacks and roof penetrations.

1.02 Related Work

- A. Refer to drawings and related Technical Specifications.

1.03 References

- A. AA (Aluminum Association) - Aluminum Construction Manual: Aluminum Sheet Metal Work and Building Construction.
- B. ASTM A525 - Steel Sheet, Zinc Coated, (Galvanized) by the Hot-Dip Process.
- C. ASTM B209 - Aluminum and Aluminum Alloy Sheet and Plate.
- D. ASTM B370 - Copper Sheet and Strip for Building Construction.
- E. CDA (Copper Development Association) - Contemporary Copper, A Handbook of Sheet Copper Fundamentals, Design, Details and Specifications.
- F. FS SS-C-153 - Cement, Bituminous, Plastic.
- G. NAAMM - Metal Finishes Handbook.
- H. NRCA (National Roofing Contractors Association) - Roofing Manual.
- I. SMACNA - Architectural Sheet Metal Manual.

1.04 System Description

METAL FLASHING/TRIM/ROOF ACCESSORIES

07620 - 1

April 6, 2017

- A. Work of this Section is to physically protect membrane roofing and base flashings, from damage that would permit water leakage to building interior.

#### 1.05 Quality Assurance

- A. Applicator: Company specializing in sheet metal flashing work with 3 years minimum experience.

#### 1.06 Submittals

- A. Submit shop drawings indicating the following:
  - 1. Describe material profile, jointing pattern, jointing details, fastening methods, and installation details.
- B. Submit product data and color chart

### PART II - PRODUCTS

#### 2.01 Materials

- A. Copper flashing fabric: 3 ounce copper bonded to lead bonded to reinforced Kraft paper covering; Type A Cop-R-Flash as manufactured by Phoenix Building Products or approved equal.
- B. Lintel Flashings: Lead coated copper, ASTM B101, Type I., Class A (12-15 lbs of lead coating per 100 sq. ft.) 17.1 oz. (0.022 inches). Shape to profiles indicated in drawings.
- C. Aluminum flashing: ASTM B209; .0253 inches thick in profile illustrated on drawings; finish to match system utilizing flashing; Shop pre-coated with Kynar 500 or equal finish.
- D. Prefinished 24 gauge hot dipped galvanized steel, G-90, commercial quality prime and finished one side with Kynar based Fluoropolymer coating.

April 6, 2017

E. Aluminum Coping:

1. Material: Aluminum 6063-T6 alloy
  - a) Coping thickness: 0.050 inch.
  - b) Anchor bar thickness: 0.100 inch thickness.
2. Finish High Performance Organic Coating: AA-C12C42Rx (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: chemical conversion coating, acid chromate-fluoride-phosphate pretreatment; Organic Coating: as specified below). prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's instructions.
  - a) Fluorocarbon 2-Coat Coating System: manufacturer's standard 2-coat thermo-cured system, composed of specially formulated inhibitive primer and fluorocarbon color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; comply with AAMA 605.2. (Color as selected by Architect from manufacturer's complete range of standard and optional colors).
3. Coping Style: Coping system shall be designed with galvanized steel anchor plate for securing the coping with no exposed fasteners. Provide peaked profile at exterior masonry screen walls. Provide splice plate for drainage at coping splices.
  - a) Products/Manufacturer:
    - 1) Perma Snap Coping; W.P. Hickman Co.
    - 2) Snap-Lok Coping 1: MM Systems Corp.
    - 3) Perma-Tite Coping; Metal Era Roof Edge System.
    - 4) Or approved equal.

2.02 Accessories

- A. Fastener: Finish exposed fasteners same as flashing metal.

April 6, 2017

- B. Reglets: 16 ounce copper permanently embedded type.

## 2.03 Fabrication

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Fabricate anchoring strips, plates, and accessories from similar and non-reactive metals.
- C. Form pieces in longest practical lengths.
- D. Form material per manufacturer's specifications.
- E. Solder and seal metal joints. After soldering, remove flux. Wipe and wash solder joints clean.

## PART III - EXECUTION

### 3.01 Inspection

- A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.
- B. Verify membrane termination and base flashings are in place, sealed, and secure.
- C. Beginning of installation means acceptance of existing conditions.

### 3.02 Preparation

- A. Field measure site conditions prior to fabricating work.
- B. Install starter and edge strips, and cleats before starting installation.
- C. Install surface mounted reglets true to lines and levels. Seal top of reglets with sealant.
- D. Insert flashings into reglets to form tight fit. Secure in place with plastic wedges at maximum 12 inches. Seal flashings into reglets with sealant.



HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW PROJECT #0215-0038

April 6, 2017

- E. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations approved by Architect/Engineer.
- F. Lap and seal all joints.
- G. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- H. Seal metal joints watertight.

END OF SECTION



April 6, 2017

## SECTION 07711 - COMMERCIAL GUTTER SYSTEM

### PART 1 GENERAL

#### 1.01 Related Documents

- A. The provisions included under Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, are included as part of this section as though bound herein.

#### 1.02 Summary

- A. Provide labor, material, and equipment necessary for furnishing a complete installation of commercial gutter system.
- B. Related Work Specified Elsewhere
  - 1. Division 5 Sections for support framing.
  - 2. Division 6 sections for nailers and support framing.
  - 3. Division 7 Sections for related roofing materials.

#### 1.03 Submittals

- A. Product Data: Each type of product specified. Submit manufacturer's detailed technical product data, installation instructions and recommendations, dimensions of individual components, profiles, and finishes.
- B. Shop Drawings: Show fabrication and installation of commercial gutter system including fully dimensioned root plans, expansion joints locations, sections and details of components and other related trims.
- C. Finish and Color Selection: Furnish manufacturer's technical data for specified finish and color chart showing full range of colors available.

April 6, 2017

#### 1.04 Quality Assurance

- A. Where pre-engineered manufactured products are specified, other field fabricated or shop/field fabricated substitutions will not be accepted. However, where shop/field fabrications are indicated, pre-engineered systems will be considered with Architect approval.
- B. Obtain all components and related accessories from one single source manufacturer.
- C. Follow manufacturer's printed instructions for installing commercial gutter system. Follow primary roofing manufacturer's printed instructions for installing associated roof material for flashing gutter system to roof.

#### 1.05 Delivery, Storage, and Handling

- A. All products delivered shall be stored in a clean dry location prior to installation.
- B. Products furnished with strippable protective masking shall not be exposed to direct sunlight for more than 30 minutes without removing masking.
- C. Do no install finished materials with scars or abrasions.

#### 1.06 Product Conditions

- A. Coordinate work of this section with adjoining work for proper sequencing to ensure protection from inclement weather and to protect materials and their finish against damage.
- B. Do no install commercial gutter system during inclement weather. When installing in cold climates, warm adhesives, caulks, and primers to at least 50 degrees Fahrenheit prior to application.

#### 1.07 Design Perimeters

- A. Commercial Gutter System shall conform to all local building codes and SMACNA design perimeters for

April 6, 2017

architectural sheet metal.

## PART 2 - PRODUCTS

### 2.01 Manufactures

- A. Provide commercial gutter system, accessories, and drainware as manufactured by Atas International, Inc. 6612 Snowdrift Rd. Allenon, PA 18106 (800) 468-1441 [www.atas.com](http://www.atas.com)
- B. Or approved equal.
- C. Provide commercial gutter with compatibility to standing seam roofing system.

### 2.02 Type

- A. Provide half round profile gutter, 6" size.

### 2.03 Materials and Fabrication

- A. Concealed Gutter Liner shall be manufactured from .050 gauge aluminum Kynar color to match roofing system in 10' - 0" lengths. Liner shall be:

Factory notched to receive brackets and straps.

- 1. Manufactured with 1" telescoping and notched end laps.
- 2. Factory punched with fastening holes elongated to allow for thermal movement.
- 3. All seams shall be fused sealed in field.
- B. Support bracket and retainer stem shall be manufactured from .125"x1.00", factory punched for fasteners.
- C. Interior straps shall be manufactured from 0.125" x 1.00" extruded aluminum.
- D. Half Round Profile

### 2.04 Accessories

- A. Mitered Corners, provide factory-mitered corners.

April 6, 2017

- B. Liner End Caps, provide mill finished aluminum liner end caps at all Fascia End Caps and wall abutments.
- C. Liner Expansion Joint, provide manufacturer's elastomeric expansion joints at 40' intervals or as shown on shop drawings.

## 2.05 Drainware

- A. Downspout and Elbows, provide round downspout 4" size at locations as indicated on plans. Downspouts shall be manufactured from .050 aluminum Kynar finished to match gutter fascia.
- B. Outlets, at all downspout locations provide stainless steel outlets to connect liner to downspout.
- C. Wall Brackets, provide wall brackets at 60" maximum spacing (minimum 2 brackets.) Brackets shall be manufactured from 0.125 " x 1.00" extruded aluminum bar, finished to match downspout.
- D. Inline Sculptured Conductor Heads, if shown on drawings, provide inline conductor head assembly consisting of a Fascia Cover, Interior Sump, and brackets at all downspout locations.

## 2.06 Finishes

- A. General: Apply coatings to exposed aluminum components after fabrication for maximum coating performance and to prevent crazing, abrasion, and damage to finish surfaces.
- B. Pretreatment: Aluminum components shall be pretreated with solutions to remove organic and inorganic surface soils, remove residual oxides, followed by chrome phosphate conversion coating to which organic coatings will firmly adhere.
- C. Coating Type: High Performance Coating, two-coat, shop applied, 70% Polyvinylidene Fluoride (PVDF) coating based on Elf Atochem, Inc. Kynar 500 or Ausimont USA, Inc. Hylar 5000 resin, meeting AAMA 2605 specification.
- D. Color: Select from manufacturer's full range of colors.

April 6, 2017

## PART 3 - EXECUTION

### 3.01 Examination

- A. The installer must examine substrates and conditions under which commercial gutter system will be installed. All wood plates and/or fascia boards shall be installed true, straight, and free of splits, cracks, or other irregularities. Do not proceed with installation until unsatisfactory conditions are corrected.

### 3.02 Preparation

- A. Prior to the installation of the commercial gutter system, soffits, extenders, and associated cornice profiles shall be installed.
- B. Installer shall thoroughly read and follow manufacturer's installation instructions before proceeding with installation.

### 3.03 Installation

- A. General: The commercial gutter system shall be installed in strict accordance with manufacturer's printed instructions. Deviations from the instructions are not allowed.
- B. Support Brackets: Layout support brackets to provide  $\frac{1}{2}$ " slope in 40 linear feet. Install support brackets with #10 x 2" stainless steel wood screws.
- C. Liner: Install concealed gutter liner onto support brackets and fasten to substrates with 1-1/2" aluminum or stainless steel nails. Rivet and seal liner joints with high grade exterior sealant as recommended by gutter manufacturer.
- D. Expansion Joints: Install elastomeric expansion joints as shown on plans and/or shop drawings. Maximum expansion joint spacing shall be 40' centers.
- E. Locate and install downspouts before proceeding with fascia installation.

April 6, 2017

- F. Install fascia with concealed splice plates over support brackets and liner. Coordinate and align spacing of joints with associated trims if applicable. Plan spacing of joints so there are no sections of fascia shorter than 48" in length. Check horizontal alignment of fascia during installation and adjust as required. At downspout locations, neatly cut fascia to accommodate downspout.
- G. Install interior straps by fully engaging them into liner and fascia, complete by securely riveting.

END OF SECTION



April 6, 2017

SECTION 07910 - JOINT FILLERS AND GASKETS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

- A. The extent of each type of joint filler and gasket work is indicated on the drawings and by provisions of this section, and is hereby defined to include required fillers and gaskets not specified in other sections of these specifications.
- B. The required applications of joint fillers and gaskets include, but are not necessarily limited to, the following general types and locations:
  - 1. Pavement, curb and sidewalk joint fillers.
  - 2. Isolation and expansion joint fillers in structural concrete.
  - 3. Exterior wall component joint fillers.
  - 4. Floor construction/expansion joint fillers.
  - 5. Joint fillers around penetrations of equipment and services through walls, floors and roofs.

1.03 SUBMITTALS:

- A. Product Data:
  - 1. Submit manufacturer's specifications, installation instructions and recommendations for each type of material required.
- B. Samples:
  - 1. Submit three, 12 inches long samples of each joint filler or gasket.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL:

April 6, 2017

- A. Size and Shape: Provide sizes and shapes of units as shown or, if not shown, as recommended by manufacturer for joint size and condition shown. Where joint movement is a factor in a determination of size, consult with Architect to determine nature and magnitude of anticipated joint movements for the temperature and condition of project at time of installation.
- B. Compressibility: Specified hardness and compressibilities are intended to establish requirements for normal or average conditions of installation and use. Where a range of hardness or compressibility is available for a product, comply with manufacturer's recommendations for specific condition of use.
- C. Color: Provide each concealed material in manufacturer's standard color which has best overall performance characteristics for application shown. Provide exposed materials in black, except where another color is indicated.
- D. Compatibility: Before purchase of each filler or gasket material, confirm that it is compatible with substrate, sealants and other materials in joint system.
- E. Adhesives: Pressure sensitive adhesives, compatible with each material in joint system may be applied (at installer's option) to one face of joint fillers and gaskets to facilitate installation and permanent anchorage. Do not allow adhesives to contaminate sealant bond surface (if any) in joint system.

2.02 CONCRETE CONTROL/EXPANSION JOINT FILLERS:

- A. Bituminous and Fiber Joint Filler:
  - 1. Provide resilient and non-extruding type premolded bituminous impregnated fiberboard units complying with ASTM D 1751, FS HH-F-341, Type 1 and AASHTO M 213.
  - 2. Provide one of the following products:
    - a. Flexcell-Knight-Celotex Corporation
    - b. Expansion-Joint Filler; BASF/Sonneborn
    - c. FF-14. Asphalt Fiber-Board; Progress Unlimited
    - d. Fibre Expansion Joint; W.R. Meadows, Inc.
    - e. Conflex Fiber Expansion Control Joint Filler, JD Russell
    - f. Or approved equal.

April 6, 2017

2.03 CELLULAR/FOAM EXPANSION JOINT FILLERS:

A. Closed-Cell PVC Joint Filler:

1. Provide flexible expanded polyvinyl chloride complying with ASTM D 1667. Grade VE 41 BL (3.0 psi compression deflection); except provide higher compression deflection grades as may be necessary to withstand installation forces.
2. Provide one of the following products:
  - a. FF2 PVC: Progress Unlimited, Inc.
  - b. Vinyl "U" 1000 Series: Williams Products, Inc.
  - c. Or approved equal.

2.04 GASKETS:

A. Molded Neoprene Gasket:

1. Provide extruded neoprene or EPDM gaskets complying with ASTM D 2000, Designation 2BC 415 to 3BC 620, black (40 to 60 Shore A durometer hardness); of the profile shown or, if not shown, as required by the joint shape, size and movement characteristics to maintain a watertight and airtight seal.
2. Provide products by one of the following manufacturers:
  - a. D.S. Brown Company
  - b. Hohmann & Barnard, Inc.
  - c. Kirkhill Rubber Company
  - d. Progress Unlimited, Inc.
  - e. JD Russell
  - f. Williams Products, Inc.
  - g. Or approved equal.

2.05 MISCELLANEOUS MATERIALS:

A. Oakum Joint Filler:

1. Provide untreated hemp or jute fiber rope, free of oil, tar and other compounds which might stain surfaces, contaminate joint walls or not be compatible with sealants.

B. Fire-Resistant Joint Filler:

April 6, 2017

1. Glass fiber or other inorganic non-combustible fiber formed with minimum of binder into resilient joint filler strips or blankets of sizes and shapes indicated, recommended by manufacturer specifically for increasing fire resistance or endurance of joint systems of type indicated, for service temperatures up to 2300 degrees F, 80% (min.) recovery 50% compression.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Installer must examine joint surfaces of units to receive fillers or gaskets and conditions under which the work is to be performed and notify the General Contractor, in writing, of conditions detrimental to proper completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.02 INSTALLATION:

- A. Comply with manufacturer's instructions and recommendations for installation of each type of joint filler or gasket required, unless more stringent requirements are shown or specified.
- B. Set units at proper depth of position in joint to coordinate with other work, including installation of bond breakers, backer rods, and sealants. Do not leave voids or gaps between ends of joint filler units.
- C. Recess exposed edges or faces of gaskets and exposed joint filler slightly behind adjoining surfaces, unless otherwise shown, so that compressed units will not protrude from joints.
- D. Bond ends of gaskets together with adhesive or by means as recommended by manufacturer to ensure continuous watertight and airtight performance. Miter-cut and bond ends at corners except where molded corner units are provided.

END OF SECTION 07910

April 6, 2017

SECTION 07920 - SEALANTS AND CAULKING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

- A. The extent of each type of sealant and caulking work is indicated on the drawings and by provisions of this section.
- B. The required applications of sealants and caulking include, but are not necessarily limited to, the following general locations:
  - 1. Flashing reglets and retainers.
  - 2. Exterior wall joints.
  - 3. Masonry control joints, exterior and interior.
  - 4. Interior sound-sealed and air-sealed joints.
  - 5. Flooring joints.
  - 6. Isolation joints, between structure and other elements.
  - 7. Paving and sidewalk joints.
  - 8. Joints at penetrations of walls, decks and floors by piping and other services and equipment.
  - 9. Joints between items of equipment and other construction.
  - 10. Joints between dissimilar materials.

1.03 QUALITY ASSURANCE:

- A. Manufacturers: Firms with not less than 5 years of successful experience in production of types of sealants and caulking compounds required for this project.
  - 1. Obtain elastomeric sealants from a manufacturer which will, upon request, send a qualified technical representative to the project site for purpose of advising installer on proper procedures for use of products.

April 6, 2017

- B. Installer: A firm with a minimum of 5 years of successful experience in application of types of materials required.

1.04 SUBMITTALS:

- A. Product Data:
  - 1. Submit manufacturer's specifications, recommendations and installation and instructions for each type of sealant, caulking compound and associated miscellaneous material required.
- B. Samples:
  - 1. Submit three, 12" long samples of each color required (except black) for each type of sealant and caulking compound exposed to view. Install sample between two strips of material similar to or representative of typical surfaces where compound will be used, held apart to represent typical joint widths.

1.05 JOB CONDITIONS:

- A. Pre-Installation Meeting: At General Contractor's direction, installer, sealant manufacturer's technical representative, and other trades involved in coordination with sealant work shall meet with General Contractor at project site to review procedures and time schedule proposed for installation of sealants in coordination with other work. Review each major sealant application required on project.
- B. Weather Conditions: Do not proceed with installation of sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended temperature range for installation. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength. Where joint width is affected by ambient temperature variations, install elastomeric sealants only when temperatures are in lower third of the manufacturer's recommended installation temperature range, so that sealant will not be subjected to excessive elongation and bond stress at subsequent low temperatures. Coordinate time schedule with General Contractor to avoid delay of project.
- C. Statement of Non-Compliance: Where it is necessary to proceed with installation of sealants or caulking compound under conditions which do not fully comply

April 6, 2017

with requirements (because of time schedule or other reasons which the General Contractor determines to be crucial to project), prepare written statement for Owner's record (with copy to Architect) indicating the nature of non-compliance, reasons for proceeding, precautionary measures taken to ensure best possible work and names of individuals concurring with decision to proceed with installation.

1.06 SPECIAL PROJECT WARRANTY (GUARANTEE):

- A. Sealant Warranty: Provide written warranty, signed by the contractor/installer, agreeing to, within warranty period of 10 years (or maximum warranty provided by manufacturer for polyurethane sealants) after date of substantial completion, replace/repair defective materials and workmanship defined to include: Instances of significant leakage of water or air; failures in joint adhesion, material cohesion, abrasion resistance, strain resistance or general durability; failure to perform as required and the general appearance of deterioration in any other manner not clearly specified in manufacturer's published product literature as an inherent characteristic of the sealant material. Warranty includes responsibility for removal and replacement of other work (if any) which conceals or obstructs the replacement of sealants.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL:

- A. Colors: Provide black or other natural color where no other standard or custom color is available. Where material is not exposed to view, provide manufacturer's standard color which has best overall performance characteristics for application shown.
1. Provide manufacturer's standard colors as selected by Architect from manufacturer's standard colors.
- B. Hardnesses shown and specified are intended to indicate general range necessary for overall performance. Consult manufacturer's technical representative to determine actual hardness recommended for conditions of installation and use. Upon request, Architect will furnish information concerning anticipated joint movement related to actual joint width and installation temperature. Except as otherwise indicated or recommended, provide compounds within the following range of hardness (Shore A, fully cured, at 75 degrees

April 6, 2017

- F.)
  - 1. 5 to 20 for high percentage of movement and minimum exposure to weather and abrasion (including no exposure to vandalism).
  - 2. 15 to 35 for moderate percentage of movement and moderate exposure to weather and abrasion.
  - 3. 30 to 60 for low percentage of movement and maximum exposure to weather and abrasion (including foot traffic on horizontal joints).
- C. Modulus of Elasticity: For joints subjected to movement, either thermal expansion or dynamic movement, select sealants from among available variations which have lowest modulus of elasticity which is consistent with exposure to abrasion or vandalism. For horizontal joints subject to traffic, select sealants with high modulus of elasticity as required to withstand indentation by stiletto heels. Comply with manufacturer's recommendations where no other requirements are indicated.
- D. Compatibility: Before selection and purchase of each specified sealant, investigate its compatibility with joint surfaces, joint fillers and other materials in joint system. Provide only materials (manufacturer's recommended variation of specified materials) which are known to be fully compatible with actual installation conditions as shown by manufacturer's published data or certification.

2.02 SEALANTS:

- A. One Part Elastomeric Sealant (Silicone)
  - 1. One component elastomeric sealant, complying with ASTM C 920, Class 25, Type NS (nonsag), unless Type S (self-leveling) recommended by manufacturer for the application shown.
    - a. Acceptable Standard
      - 1. "Pecora 864 Architectural Silicone Sealant; Pecora Corp.
      - 2. Dow Corning 791; Dow Corning Corp.
      - 3. Silpruf; General Electric
      - 4. Omniseal; Sonneborn Building Products, Inc.
      - 5. Spectrem 2; Tremco Mfg. Co.
      - 6. Or approved equal.
  - 2. One-Component mildew resistant silicone sealant:



April 6, 2017

(Around countertops and backsplashes and other wet interior locations).

- a. Acceptable Standard
  - 1. Rhodorsil 6B white; Rhone-Poulenc Inc.
  - 2. Dow Corning 786; Dow Corning Corp.
  - 3. Sanitary 1700; General Electric
  - 4. Or approved equal.

- 3. One Component high movement joints (+100/-50):  
Where locations of high movement are indicated.

- a. Dow Corning 790; Dow Corning Corp.,
- b. Spectrem 1; Tremco
- c. Or approved equal

B. Elastomeric Sealant (Polyurethane)

- 1. One component polyurethane sealant, complying with ASTM C 920, Type S, Grade NS, Class 25 (nonsag).

- a. Acceptable Standard
  - 1. Sonolastic NP 1; Sonneborn Building Products Inc.
  - 2. Dymonic; Tremco Mfg. Co.
  - 3. Dynatrol I; Pecora Corp.
  - 4. Vulkem 921; Mameco
  - 5. CS 2130; Hilti
  - 6. Sikaflex 1A; Sika Corp.
  - 7. Sikaflex 15LM; Sika Corp.
  - 8. Or approved equal

- 2. Two Component polyurethane sealant, complying with ASTM C 920, Type M, Grade NS, Class 25 (nonsag).

- a. Acceptable Standard
  - 1. Sonolastic NP 2; Sonneborn Building Products Inc.
  - 2. Dymonic; Tremco Mfg. Co.
  - 3. Dynatrol II; Pecora Corp.
  - 4. Vulkem 922; Mameco
  - 5. Sikaflex LCNSEZ; Sika Corp.
  - 6. Or approved equal

C. One-part self-leveling polyurethane sealant (for traffic areas).

- 1. One Component polyurethane self-leveling sealant, complying with ASTM C 920, Type S, Grade P, Class 25.

- a. Acceptable Standard
  - 1. Sonolastic SL 1; Sonneborn Building Products Inc.
  - 2. NR-201 Urexpan; Pecora Corp.

April 6, 2017

3. Vulkem 45; Mameco
    4. Sikaflex 1CSL; Sika Corp.
    5. Or approved equal
  2. Two-component polyurethane self-leveling sealant, complying with ASTM C 920, Type M, Grade P, Class 25.
    - a. Acceptable Standard
      1. Sonolastic SL 2; Sonneborn Building Products Inc.
      2. NR-200 Urexpan; Pecora Corp.
      3. Vulkem 245; Mameco
      4. THC900/THC901; Tremco
      5. Sikaflex 2CSL; Sika Corp.
      6. Or approved equal
- D. Security Sealant (Polyurethane)
  1. One component or two component polyurethane sealant, complying with ASTM C 920, Grade NS, Class 12.5, with a Shore A Hardness of 55.
    - a. Acceptable Standard
      1. Dynaflex; Pecora Corp.
      2. Ultra; Sonneborn Building Products, Inc.
      3. Or approved equal

#### 2.04 CAULKING COMPOUNDS:

- A. Caulking Compounds: (Acrylic Latex Sealant)
  1. Latex rubber modified, acrylic emulsion polymer sealant compound; manufacturer's standard, one part, nonsag, mildew resistant, acrylic emulsion sealant complying with ASTM C 834, formulated to be paintable and recommended for exposed applications on interior locations involving joint movement of not more than plus or minus 5 percent.
  2. Acceptable Standard
    - a. Sonolac, Sonneborn Building Products Inc.
    - b. Acrylic Latex Caulk 834, Tremco Inc.
    - c. Acrylic Latex Caulk with Silicone, DAP
    - d. AC-20, Pecora Corp.
    - e. Or approved equal

#### 2.05 MISCELLANEOUS MATERIALS:

- A. Joint Cleaner: Provide type of joint cleaning compound recommended by sealant or caulking compound manufacturer, for joint surfaces to be cleaned.

April 6, 2017

- B. Joint Primer/Sealer: Provide type of joint primer/sealer recommended by sealant manufacturer, for joint surfaces to be primed or sealed.
- C. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.
- D. Sealant Backer Rod: Compressible rod stock polyethylene foam, polyethylene jacketed polyurethane foam butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended for compatibility with sealant by the sealant manufacturer.
- E. Provide size and shape of rod which will control joint depth for sealant placement, break bond of sealant at bottom of joint, form optimum shape of sealant bead on back side, and provide a highly compressible backer to minimize possibility of sealant extrusion when joint is compressed.

### PART 3 - EXECUTION

#### 3.01 EXAMINATION:

- A. The installer must examine joint surfaces, backing and anchorage of units forming sealant rabbet and condition under which sealant work is to be performed and notify the General Contractor in writing of conditions detrimental to proper completion of the work and performance by sealants. Do not proceed with sealant work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

#### 3.02 SELECTION OF MATERIAL

- A. Caulking compounds shall be used for interior nonmoving joints and at locations indicated.
- B. One component elastomeric silicone sealants shall be used at exterior and interior joints where thermal or dynamic movement is anticipated including, but not limited to, the following locations:
  - 1. Metal to metal joints.
  - 2. Sheet metal flashing, coping, preformed metal

April 6, 2017

caps, fascias, extenders, trim and panels.

- C. One or two component elastomeric polyurethane sealants shall be used at exterior and interior joints where weatherproofing or waterproofing is required and at exterior joints between dissimilar materials including, but not limited to, the following locations:
1. Expansion and control joints.
  2. Exterior side of hollow metal frames to adjacent materials.
  3. Exterior side of aluminum frames to adjacent dissimilar materials.
  4. Lintels and shelf angles to masonry construction.
  5. Louvers to adjacent construction.
  6. Vertical interior expansion joints and horizontal interior and exterior control joints and expansion joints in the building.
  7. Joints in concrete site improvements (sidewalks, ramps, retaining walls) and the joint between the concrete slabs and dissimilar materials.
  8. Sealant in pipe sleeves where materials must perforate the floor slab.
  9. Perimeter of floor slabs or concrete curbs which abut vertical surfaces.
  10. Exterior joints between dissimilar materials where the joining of the two surfaces leaves a gap between the meeting materials or components as may be dictated by the various methods of construction to make watertight.
  11. Exterior locations which are noted "caulked" or "sealant" and not specifically listed herein or included in the work of other sections of the Specifications.
  12. Interior joints between dissimilar materials where the joining of the 2 surfaces leave a gap between the meeting materials and components.
- D. One or two part self-leveling polyurethane sealants shall be used for exterior and interior horizontal joints subject primarily to pedestrian traffic and light and moderate vehicular traffic.
- E. Security sealant shall be used in vertical control joints in the interior side of building.

### 3.03 JOINT SURFACE PREPARATION:

- A. Clean joint surfaces immediately before installation of sealant or caulking compound. Remove dirt, insecure coatings, moisture and other substances which would

April 6, 2017

interfere with bond of sealant or caulking compound.

- B. For elastomeric sealants, do not proceed with installation of sealant over joint surfaces which have been painted, lacquered, waterproofed or treated with a water repellent or other treatment or coating unless a laboratory test for durability (adhesion), in compliance with paragraph 4.3.9. of FS TT-S-00227 has successfully demonstrated that sealant bond is not impaired by coating or treatment. If laboratory test has not been performed or shows bond interference, remove coating or treatment from joint surfaces before installing sealant.
- C. Etch concrete and masonry joint surfaces to remove excess alkalinity, unless sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Etch with 5% solution of muriatic acid; neutralize with dilute ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.
- D. Roughen joint surfaces on vitreous coated and similar non-porous materials, where sealant manufacturer's data indicated lower bond strength than for porous surfaces. Rub with fine abrasive to produce a dull sheen.

#### 3.04 INSTALLATION:

- A. Comply with sealant manufacturer's printed instructions except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.
- B. Prime or seal joint surfaces where shown or recommended by sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.
- C. Install sealant backer rod for liquid sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown.
- D. Install bond breaker tape where shown and where required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.
- E. Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on

April 6, 2017

opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.

- F. Install sealants to depths as shown or if not shown as recommended by sealant manufacturer but within the following general limitations, measured at center (thin) section of bead.
1. For sidewalks, pavement and similar joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to a depth equal to 75% of joint width and neither more than 5/8" deep nor less than 3/8" deep.
  2. For normal moving joints sealed with elastomeric sealants, but not subject to traffic, fill joints to a depth equal to 50% of joint width, but neither more than 1/2" deep nor less than 1/4" deep.
  3. For joints sealed with non-elastomeric sealants and caulking compounds, fill joints to a depth in the range of 75% to 125% of joint width.
- G. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces or to migrate into voids of adjoining surfaces including exposed aggregate panels and similar rough textures. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces but either primer/sealer or the sealant/caulking compound.
- H. Remove excess and spillage of compounds promptly as the work progresses. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage without damage to adjoining surfaces or finishes.

#### 3.04 CURE AND PROTECTION:

- A. Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendations to obtain high early bond strength, internal cohesive strength and surface durability. Do not cure in a manner which would significantly alter materials

HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW PROJECT #0215-0038

April 6, 2017

modulus of elasticity or other characteristics.

- B. Installer shall advise the General Contractor of procedures required for curing and protection of sealants and caulking compounds during construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at time of Owner's acceptance.

END OF SECTION 07920





April 6, 2017

SECTION 08112 - HOLLOW METAL WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

- A. The extent of hollow metal work is shown on the drawings and schedules.
- B. This section includes hollow metal doors and pressed steel frames for doors and related openings.

1.03 QUALITY ASSURANCE:

- A. Provide doors and frames complying with ANSI A258.8-1998 (SDI-100) "Recommended Specifications for Standard Steel Doors and Frames" and as herein specified.
- B. Fire-rated door assemblies shall be Underwriter Laboratory.: Where fire-rated door assemblies are indicated or required, provide fire-rated door and frame assemblies that comply with NFPA 80 "Standard for Fire Doors and Windows", and have been tested, listed, and labeled in accordance with ASTM E 152 "Standard Methods of Fire Tests for Door Assemblies". All metal labels to be riveted to door and frames mylar labels not acceptable.

1.04 SUBMITTALS:

- A. Product Data: Submit manufacturer's specifications for fabrication and installation, including data substantiating that products comply with requirements.
- B. Shop Drawings: Submit shop drawings for the fabrication and installation of hollow metal work. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections.
  - 1. Provide a schedule of doors and frames using same reference numbers for details and openings as those on the contract drawings.

April 6, 2017

1.05 DELIVERY, STORAGE AND HANDLING:

- A. Deliver hollow metal work cartoned or crated to provide protection during transit and job storage.
- B. Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided the finish items are equal in all respects to new work and acceptable to the Architect; otherwise remove and replace damaged items as directed.
- C. Store doors and frames at the building site under cover. Place units on at least 4" high wood sills or on floors in a manner that will prevent rust and damage. Avoid the use of non-vented plastic or canvas shelters which could create a humidity chamber. If the cardboard wrappers on doors become wet, remove carton immediately. Provide 1/4" spaces between stacked doors to promote air circulation.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. ASTM A653/A653M - Standard Specification for sheet steel, zinc coated (galvanized) or zinc-iron alloy-coated (galvannealed) by the hot dip process (A60). .
- B. ASTM A924 - Specification for general requirements for steel sheet metallic coated by the hot dip process (A60).
- C. ASTM A 1009/A1008M - Standard specification for steel sheet, cold rolled, carbon, high strength low-alloy, high strength low alloy with improved formability, solution hardened, and bake hardenable.
- D. Supports and Anchors: Fabricate of not less than 16 gage sheet metal. Galvanize after fabrication units to be built into exterior walls, complying with ASTM A 153, Class B.
- E. Inserts, Bolts and Fasteners: Manufacturer's standard units, except hot-dip galvanize items to be built into exterior walls, complying with ASTM A 153, Class C or D as applicable.
- F. Shop-Applied Paint: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as base for specified finish paints on steel surfaces.

April 6, 2017

2.02 FABRICATION, GENERAL:

- A. Fabricate hollow metal units to be rigid, neat in appearance, and free from defects, warp or buckle. Accurately form metal to required sizes and profiles. Wherever practicable, fit and assemble units in the manufacturer's plant. Clearly identify work that cannot be permanently factory-assembled before shipment to assure proper assembly at the project site. Weld exposed joints continuously; grind, dress, and make smooth, flush, and invisible. Metallic filler to conceal manufacturing defects is not acceptable.
- B. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips or Jackson heads for exposed screws and bolts.
- C. Finish Hardware Preparation:
  - 1. Prepare hollow metal units to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling, and tapping in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A 115 series specifications for door and frame preparation for hardware.
  - 2. Reinforce hollow metal units to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site.
  - 3. Locate finish hardware as shown on final shop drawings, or if not shown, in accordance with "Recommended Locations for Builder's Hardware", published by Door and Hardware Institute.
- D. Shop Painting:
  - 1. Clean, treat and paint exposed surfaces of fabricated hollow metal units, including galvanized surfaces.
  - 2. Clean steel surfaces of mill scale, rust, oil, grease, dirt and other foreign materials before application of paint.
  - 3. Apply pretreatment to cleaned metal surfaces, using cold phosphate solution (SSPC-PT-2), hot phosphate solution (SSPC-PT4) or basic zinc chromate-vinyl butyral solution (SSPC-PT3).

HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW PROJECT #0215-0038

April 6, 2017

4. Apply shop coat or prime paint within time limits recommended by pretreatment manufacturer. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 2.0 mils, comply with ANSI A250.18.

E. Manufacturer: Provide hollow metal work by one of the following:

1. Ceco Door Products
2. Amweld Building Products
3. Steelcraft (Allegion)
4. Or approved equal

2.03 DOORS:

A. General:

1. Provide flush design doors, 1-3/4" thick, seamless hollow construction, unless otherwise indicated. Bevel both vertical edges 1/8" in 2".
2. Insulated doors: Interior core of doors to be foamed in place, closed cell, polyurethane foam chemically bonded to door face sheets. Voids in foam will not exceed 1/2" in any direction. Compressive strength of polyurethane to be minimum of 20 PSI. Foam density not less than 1-8 PCF. Polystyrene core doors not acceptable. Doors to have R factor of not less than 14.81 U factor of .068.

B. Exterior Doors:

1. Provide doors meeting SDI Grade III, extra heavy duty, 1 3/4" thick (level A) Model 2 or seamless hollow steel construction. Fabricate exterior doors of 2 outer, galvanized, stretcher-level steel sheets not less than 16 gage. Construct doors with smooth, flush surfaces without visible joints or seams on exposed faces or stile edges except around glazed or louvered panel inserts. Provide weephole openings in the bottom of doors to permit escape of entrapped moisture.
2. Reinforce inside of doors with vertical galvanized sheet steel sections not less than 22 gage. Space vertical reinforcing 6" o.c. and extend full door height. Spot-weld at not more than 5" o.c. to both face sheets.

April 6, 2017

- a. Continuous truss-form inner core of 28 gage galvanized sheet steel reinforcing may be provided as inner reinforcement in lieu of above. Spot-weld truss-form reinforcement 3" o.c. vertically and horizontally over entire surface of both sides.
  3. Reinforce tops and bottoms of doors with 16 gage horizontal steel channels welded continuously to outer sheets. Close top and bottom edges to provide weather seal as integral part of door construction or by addition or inverted steel channels.
- C. Interior Doors:
1. Fabricate interior doors of two outer, cold-rolled, stretcher-leveled steel sheets not less than 14 gage. Construct doors with smooth, flush surfaces, without visible joints or seams on exposed faces or stile edges except around glazed or louvered panel inserts.
  2. Reinforce inside of doors with vertical, hot-rolled, not less than 22 gage steel sections. Space vertical reinforcing 6" o.c. and extend full door height. Spot weld at not more than 5" o.c. to both face sheets.
    - a. Continuous truss-form inner core of 28 gage sheet metal reinforcing may be provided as inner reinforcement in lieu of above. Spot-weld truss-form reinforcement 3" o.c. vertically and horizontally over entire surface of both sides.
  3. Reinforce tops and bottoms of doors with 14 gage, horizontal steel channels, welded continuously to outer sheets.
- D. Finish Hardware Reinforcement: Reinforce doors for required finish hardware as follows:
1. Hinges: Steel plate 3/16" thick x 1-1/2" wide x 6" longer than hinge, secured by not less than 6 spot-welds.
  2. Mortise Locksets and Dead Bolts: 14 gage steel sheet, secured with not less than two spot-welds.
  3. Cylinder Locks: 12 gage steel sheet, secured with not less than two spot-welds.

April 6, 2017

4. Flush Bolts: 12 gage steel sheet, secured with not less than two spot-welds.
5. Surface-Applied Closers: 12 gage steel sheet, secured with not less than six spot-welds.
6. Plush Plates and Bars: 16 gage steel sheet (except when through bolts are shown or specified), secured with not less than two spot-welds.
7. Surface Panic Devices: 14 gage sheet steel (except when through bolts are shown or specified), secured with not less than two spot-welds.

2.04 FRAMES:

- A. Provide hollow metal frames for doors, side-lights, borrowed lights, and other openings of sizes and profiles as indicated.
- B. Fabricate frames of full-welded unit construction with corners mitered, reinforced, continuously welded full depth and width of frame, unless otherwise indicated.
  1. Knock-down type frames are not acceptable.
- C. Form frames of galvanized steel sheets for exterior and either cold or hot-rolled sheet steel for interior.
  1. Gage: Not less than 14, for exterior openings up to and including 4'-0" wide.
  2. Gage: Not less than 14, for interior openings up to and including 4'-0" wide.
  3. For openings over 4'-0" wide: Not less than 12 gauge.
- D. Finish Hardware Reinforcement: Reinforce frames for required finish hardware as follows:
  1. Hinges and Pivots: Steel plate 3/16" thick x 1-1/2" wide x 6" longer than hinge, secured by not less than six spot-welds.
  2. Strike Plate Clips: Steel plate 3/16" thick x 1-1/2" wide x 3" long.
  3. Surface-Applied Closers: 12 gage steel sheet, secured with not less than six spot-welds.

April 6, 2017

4. Concealed Closers: Removable steel access plate, 12 gage internal reinforcement of size and shape required, and enclosing housing to keep closer pocket free of mortar or other materials.
- E. Head Reinforcing: Where installed in masonry, leave vertical mullions in frames open at top for grouting.
- F. Jamb Anchors: Furnish jamb anchors as required to secure frames to adjacent construction, formed of not less than 18 gage galvanized steel.
  1. Masonry Construction: Adjustable, flat, corrugated or perforated T-shaped to suit frame size, with leg not less than 2" wide by 10" long. Furnish at least three anchors per jamb up to 7'-6" height; four anchors up to 8'-0" jamb height; one additional anchor for each 24" or fraction thereof over 8'-0" height.
  2. Metal Stud Partitions: Insert type with notched clip to engage metal stud, welded to back of frames. Provide at least four anchors for each jamb for frames up to 7'-6" in height; five anchors up to 8'-0" jamb height; one additional anchor each 24" or fraction thereof over 8'-0" height.
  3. In-Place Concrete or Masonry: Anchor frame jambs with minimum 3/8" concealed bolts into expansion shields or inserts at 6" from top and bottom and 26" o.c., unless otherwise shown. Reinforce frames at anchor locations. Apply removable stop to cover anchor bolts unless otherwise indicated.
- G. Floor Anchors: Provide floor anchors for each jamb and mullion which extends to floor, formed of not less than 14 gage galvanized steel sheet as follows:
  1. Monolithic Concrete Slabs: Clip type anchors with two holes to receive fasteners, welded to bottom of jambs and mullions.
- H. Head Anchors: Provide two anchors at head of frames exceeding 42" wide for frames mounted in steel stud walls.
- I. Head Strut Supports: Provide 3/8" x 2" vertical steel struts extending from top of frame at each jamb to supporting construction above, unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction above. Provide adjustable bolted anchorage to frame jamb members.

April 6, 2017

- J. Structural Reinforcing Members: Provide as part of frame assembly, where indicated at mullions, transoms, or other locations which are to be built into frame.
- K. Head Reinforcing: For frames over 4'-0" wide in masonry wall openings, provide continuous steel channel or angle stiffener not less than 12 gage for full width of opening welded to back of frame at head.
- L. Spreader Bars: Provide removable spreader bar across bottom of frames, tack welded to jambs and mullions.
- M. Rubber Door Silencers: Except on weatherstripped doors, drill stops to receive three silencers on single-door frames and four silencers on double door frames. Install plastic plugs to keep holes clear during construction.
- N. Plaster Guards: Provide 26 gage steel plaster guards or dust cover boxes, welded to frame at back of finish hardware cutouts where mortar or other materials might obstruct hardware installation.

2.05 STOPS AND MOLDINGS:

- A. Provide stops around glazed panels in hollow metal units and in frames to receive doors where indicated.
- B. Form fixed stops integral with frame, unless otherwise indicated.
- C. Provide removable stops and molds where indicated or required, formed of not less than 20 gage steel sheets matching steel on frames. Secure with countersunk machine screws spaced uniformly not more than 12 o.c.. Form corners with butted hairline joints.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Installer must examine substrate and conditions under which hollow metal work is to be installed and must notify the General Contractor, in writing, of any conditions detrimental to proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.



April 6, 2017

3.02 INSTALLATION:

A. Install hollow metal units and accessories in accordance with final shop drawings, manufacturer's data, and as herein specified.

B. Setting Masonry Anchorage Devices:

1. Provide masonry anchorage devices where required for securing hollow metal frames to in-place concrete or masonry construction.
2. Set anchorage devices opposite each anchor location, in accordance with details on final shop drawings and anchorage device manufacturer's instructions. Leave drilled holes rough, not reamed, and free from dust and debris.
3. Floor anchors may be set with powder-actuated fasteners instead of masonry anchorage devices and machine screws, if so indicated on final shop drawings.

C. Placing Frames:

1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After all construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged.
2. Protective Coating: In masonry walls, protect inside (concealed) faces of door frames using fibered asphalt emulsion coating. Apply approximately 1/8" thick over shop primer and allow to dry before handling.
3. In masonry construction, building-in of anchors and grouting of frames is included in Section 04300 "Masonry Work" of these specifications.
4. At in-place concrete or masonry construction, set frames and secure in place with machine screws and masonry anchorage devices.
5. Place frames at fire-rated openings in accordance with NFPA Standard No. 80.
6. Make field splices in frames as detailed on final shop drawings, welded and finished to match factory work.

April 6, 2017

7. Remove spreader bars only after frames or bucks have been properly set and secured.

D. Door Installation:

1. Fit hollow metal doors accurately in their respective frames with the following clearances:
  - a. Jambs and Head: 3/32".
  - b. Meeting Edges, Pairs of Doors: 1/8".
  - c. Bottom: 1/4" at threshold or carpet.
  - d. Bottom: 1/4" to threshold or tile
  - e. Bottom: 1/8" to bottom of head or transom panel.
2. Place fire-rated doors with clearances as specified in NFPA Standard No. 80.
3. Finish Hardware installation is specified in Section 08710.

3.03 ADJUST AND CLEAN:

- A. Final Adjustments: Check and re-adjust operating finish hardware items in hollow metal work just prior to final inspection. Leave work in complete and proper operating conditions. Remove and replace defective work, including doors or frames which are warped, bowed or otherwise unacceptable.
- B. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

END OF SECTION 08112

April 6, 2017

SECTION 08210 - FLUSH WOOD DOORS

PART 1. GENERAL

1.1 SECTION INCLUDES: Wood doors non-rated and fire-rated

- A. Solid core flush wood doors

1.2 RELATED SECTIONS

- A. Section 06100 - Carpentry
- B. Section 06402 - Interior Architectural Woodwork
- C. Section 08710 - Finish hardware

1.3 REFERENCES AND REGULATORY REQUIREMENTS

- A. ASTM E152 - Methods of Fire Tests and Door Assemblies.
- B. NFPA 252 - Standard Methods for Fire Assemblies.
- C. UBC 7-2-1994
- D. UBC 7-2, 1997
- E. Michigan Building Code 2012
- F. UL 10 (c) - Fire Tests for Door Assemblies - Positive Pressure
- G. UL 10 (b) - Fire Tests for Door Assemblies - Neutral Pressure
- H. NFPA 80 - Fire Doors and Windows.
- I. Quality Standards:
  - 1. WDMA Industry Standard I.S. 1A-04
  - 2. ANSI A115. W Series, Wood Door Hardware Standards. (American National Standard Institute)
- J. Labeling Agencies
  - 1. Intertek Testing Services-Warnock Hersey (ITS-WH)
  - 2. Underwriters Laboratories (UL)

1.4 SUBMITTALS

- A. Shop drawings: Indicate location, size, and hand of each door; elevation of each kind of door; location and extent of hardware blocking; and other pertinent data.
  - 1. Indicate dimensions and locations of mortises and holes for hardware.
  - 2. Indicate dimensions and locations of cutouts.
  - 3. Indicate requirements for veneer matching.

April 6, 2017

4. Indicate doors to be factory finished and finish requirements.
  5. Indicate fire ratings for fire doors.
- B. Samples for Initial Selection: Color charts consisting of actual materials in small sections for the following:
1. Faces for Factory Finished doors: Show the full range of colors available for stained finishes.
- C. Samples for Verification:
1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide one piece of the expected finished work.

#### 1.5 QUALITY ASSURANCE

- A. Source limitations: Obtain flush wood doors through one source from a single manufacturer.
- B. Quality standard: Comply with WDMA I.S.1-A 04
- C. Fire-rated Doors: Doors complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UBC 7-2-1997 (Positive Pressure)

#### 1.6 DELIVERY STORAGE AND HANDLING AND SITE CONDITIONS

- A. Deliver, store, protect and handle products under provisions of WDMA.
- B. Package doors individually and wrap bundles of doors. Inspect for damage. Do not store in damp or wet areas. HVAC systems should be operating and balanced prior to arrival of doors. Acceptable humidity shall be no less than 25% nor greater than 55%.

April 6, 2017

from exposure to natural and artificial light after  
delivery.

1.7 WARRANTY

- A. Provide manufacturer's warranty for Interior Solid Core  
Doors:
  - 1. Full Lifetime Warranty

PART 2. PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with requirements, provide products  
by one of the following:
  - 1. Flush wood doors:
    - a. Algoma Hardwoods, Inc.
    - b. Eggers Industries
    - c. Poncraft Door Company
    - d. Graham Manufacturing Corporation
    - e. Marshfield Door Systems
    - f. Or approved equal
- B. Substitutions allowed only with written approval by  
architect prior to bid date.

2.2 DOOR CONSTRUCTION, GENERAL

- A. WORKMANSHIP
  - 1. Comply with WDMA I.S. 1A-04
- B. PERFORMANCE STANDARD
  - 1. Comply with WDMA I.S. 1A-04 Extra Heavy Duty
- C. DOORS FOR TRANSPARENT FINISH:
  - 1. Grade: Premium, with A Grade Faces
  - 2. Wood veneer Species and Cut:
    - a. Plain sliced red oak.
  - 3. Match between veneer leaves: Book match
  - 4. Assembly of spliced veneers: Running
  - 5. Pair and Set match: Provide for doors hung in same

April 6, 2017

opening or separated only by mullions.

6. Door with Transom: Continuous match

D. DOORS FOR OPAQUE FINISH:

1. Medium Density Overlay

E. Interior Veneer-faced doors:

1. Stiles and rails bonded to core, then entire unit  
abrasive planed before veneering.

F. Rating: Positive pressure Category A (concealed  
intumescent).

## 2.3 SOLID-CORE DOORS

A. NON-FIRE RATED WOOD DOORS

1. Non-rated and 20-minute rated

a. LD-2 Particleboard, PC-5

2. Provide manufacturers standard laminated-edge  
construction with improved screw-holding capability and  
split resistance.

3. 20-minute rated pairs:

a. Provide with fire-retardant stiles matching face  
veneer that are labeled and listed for kinds of  
applications indicated without formed-steel edges  
and astragals.

b. As required by manufacturer to permit positive  
pressure ``S`` label per Category H.

B. FIRE RATED WOOD DOORS

1. Manufacturer's standard mineral-core construction as  
needed to provide fire rating indicated.

2. Blocking: provide composite blocking with improved  
screw-holding capability approved for use in doors of  
fire ratings indicated as needed to eliminate through-  
bolting hardware for surface applied hardware.

April 6, 2017

3. Provide manufacturers standard laminated-edge construction with improved screw-holding capability and split resistance that are labeled and listed to provide fire rating indicated.

4. Pairs: Metal edges.

#### 2.4 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels, unless otherwise indicated:

1. WDMA prefit clearances for factory fit doors
2. NFPA 80 for fire rated doors
3. Manufacturers hardware templates

B. Factory machine doors for hardware that is not surface applied. Comply with final hardware schedules, door frame Shop Drawings, and hardware templates.

1. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.

C. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standard for kind(s) of doors(s) required.

1. Light openings: Trim openings with moldings of material and profile indicated.
2. Louvers: Factory install louvers in prepared openings.

D. Apply appropriate labels.

#### 2.5 FACTORY FINISH

A. General: Comply with WDMA finish requirements.

B. Finish doors at factory.

C. Transparent Finish:

1. Finish: WDMA TR-6 catalyzed polyurethane.
2. Staining: As selected from manufacturers standard

April 6, 2017

colors.

- D. Factory finished doors to be installed just prior to substantial completion.

## 2.6 FACTORY GLAZING

- A. Glazing in wood doors to be installed by wood door manufacturer.

## 2.7 ACCESSORIES

### A. GLAZING STOPS

- 1. Non-Rated:
  - a. Wood, of the same species/compatible with door species.
- 2. Fire-Rated:
  - a. Veneer wrapped rolled steel, of same species as door facing.

### B. APPLIED MOLDINGS:

- 1. As selected from manufacturer's standard profiles and install as detailed.
- 2. Applied moldings to be affixed to the door without the use of nails or staples.

## PART 3. EXECUTION

### 3.1 EXAMINATION

- A. Examine doors and installed frames before hanging doors.
  - 1. Verify that frames comply with indicated requirements for type, size, location and swing characteristics and have been installed with level heads and plumb jambs.
  - 2. Reject doors with defects prior to hanging.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION



April 6, 2017

- A. Hardware: For installation, Refer to Division 8 Section 08710 ``Finish Hardware.``
- B. Manufacturer's written instructions: Install doors to comply with manufacturer's written instructions, referenced quality standard, and as indicated.
  - 1. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80.
- C. Align all doors for uniform clearance at each edge.
- D. Factory finished doors: Restore finish before installation if fitting or machining is required at Project site.

### 3.3 ADJUSTING

- A. Operation: Adjust all doors to swing and operate freely.

END OF SECTION 08210



HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW PROJECT #0215-0038

April 6, 2017

SECTION 08305 - ACCESS DOORS & PANELS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

- A. The extent, location and size of each type of access door required is shown on the drawings.
- B. Related work specified elsewhere:
  - 1. Gypsum Drywall Section 09250
  - 2. Division 15 Mechanical
  - 3. Division 16 Electrical

1.03 QUALITY ASSURANCE:

- A. Fire-Resistance Ratings: Wherever a fire-resistance classification is indicated, provide access door assembly with panel door, frame, hinge, and latch from manufacturer listed in Underwriters' Laboratories, Inc. "Classified Building Materials Index" for the rating shown.
  - 1. Provide UL label on each fire-rated access door.
- B. Size Variations: Obtain Architects' acceptance of manufacturer's standard size units which may vary slightly from sizes indicated.
- C. Manufacturer: Provide access doors as manufactured by one of the following:
  - 1. Larsens
  - 2. Karp Associates Inc.
  - 3. Milcor
  - 4. Or approved equal
- D. Inserts and Anchorages:
  - 1. Furnish inserts and anchoring devices which must be built into other work for the installation of access doors. Coordinate delivery with other work

April 6, 2017

to avoid delay.

1.04 SUBMITTALS:

A. Manufacturer's Data:

1. For information only, submit 2 copies of manufacturer's technical data and installation instructions for each type of access door assembly. Transmit copy of each instruction to the Installer.
  - a. Provide setting drawings, templates, instructions and directions for installation of anchorage devices.

PART 2 - PRODUCTS

2.01 MATERIALS & FABRICATION:

- A. General: Furnish access door assemblies manufactured as an integral unit, complete with all parts and ready for installation.
- B. Steel Access Doors and Frames: Fabricate units of continuous welded steel construction, unless otherwise indicated. Grind welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of the type required to secure access panels to the types of support shown.
- C. Frames:
  1. Fabricate from 12 gauge steel (16 gauge for ceiling applications). Hot dip galvanize (per ASTM A123) frames which are to be installed on the exterior.
  2. Fabricate frame with exposed flange approximately 1'' wide around perimeter of frame for units installed in the following construction.
    - a. Exposed masonry.
    - b. Drywall finish.
  3. For installation in masonry construction, furnish frames with adjustable metal masonry anchors.

April 6, 2017

D. Flush Panel Doors:

1. Fabricate from not less than 12 gage sheet steel (16 gage for ceiling applications) with concealed spring hinges set to open to 175 degrees. Finish with manufacturer's factory-applied prime paint. Hot dip galvanize (per ASTM A123) which are to be installed on the exterior.
2. Provide flush panel doors, unless otherwise indicated.
3. For fire-rated units, provide manufacturer's standard insulated flush panel doors.

E. Locking Devices:

1. Interior: Furnish flush, spanner head cam locks of the number required to hold door in flush, smooth plane when closed.
2. Exterior: Furnish flush, mortise locks of the number required to hold door in a flush smooth plane when closed.

F. Schedule: Provide the following types of access panels (basis of design is Larsens):

1. Wall Applications: Model L-DPM minimum size 36'' x 36'' with masonry anchors where required and prep for spanner head cam lock provided by Larsens. Provide where indicated on mechanical/electrical/architectural drawings or required by code to access existing/new valves, junction boxes, etc.
  - a. At fire rated locations provide Model L-DPFB (with masonry anchors for wall applications where required) and prep for spanner head cam lock provided by Larsens. 36'' x 36'' minimum for wall applications. Rating shall be same as wall fire rating on drawings.
2. Ceiling Application: Model L-CPA minimum size 24'' x 24'' with prep for spanner head cam lock provided by Larsens. Provide where indicated on mechanical/electrical drawings or required by code to access existing/new valves, junction boxes, etc.

April 6, 2017

- a. At fire rated locations provide model L-FRAP and prep for spanner head cam lock provided by Larsens. 24'' x 24'' for ceiling applications. Rating shall be same as ceiling fire rating on drawings.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Installer must examine the conditions under which access doors are to be installed and notify the General Contractor, in writing, of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.02 INSTALLATION:

- A. Comply with manufacturer's instructions for installation of access doors.
- B. Coordinate installation with work of other trades.
- C. Set frames accurately in position and securely attach to supports with face panels plumb or level in relation to adjacent finish surfaces.
- D. Adjust hardware and panels after installation for proper operation.
- E. Remove and replace panels or frames which are warped, bowed or otherwise damaged.

END OF SECTION 08305

April 6, 2017

SECTION 08330 - Rolling Counter Shutter

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Overhead coiling counter doors.

1.02 RELATED SECTIONS:

- A. Refer to drawing and related Technical Specification.

1.03 REFERENCES:

- A. ANSI/ASTM b221 - Aluminum-Alloy Extruded Bar, Rod, Wire, Shape and Tube.
- B. ANSI/UL 325 - Door, Drapery, Gate, Louver and Window Operators and Systems.
- C. NEMA ICS 2 - Standards for Industrial Control Devices, Controllers and Assemblies.

1.04 SYSTEM DESCRIPTION:

- A. Manual push up unit with overhead counter balance device.

1.05 DESIGN REQUIREMENTS:

- A. Design shutter assembly to withstand wind/suction load of 20 psf, without undue deflection or damage to shutter or assembly components.

1.06 SUBMITTALS:

- A. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations and installation details.
- B. Product Data: Provide general construction, component connections and details.
- C. Samples: Submit two shutter slats, 6x6 in size illustrating shape, color and finish texture.
- D. Manufacturer's Installation Instructions: Indicate installation sequence and procedures, adjustment and alignment procedures.

1.07 MAINTENANCE DATA:

- A. Submit Maintenance Data: Indicate lubrication requirements and frequency, and periodic adjustments required.

April 6, 2017

1.08 REGULATORY REQUIREMENTS:

- A. Provide certificate of compliance from authority having jurisdiction indicating approval of shutter and operating hardware assembly.

1.09 FIELD MEASUREMENTS:

- A. Verify that field measurements are as indicated on shop drawings.

PART 2 - PRODUCTS

2.01 MANUFACTURER:

- A. Overhead Door [www.overheaddoor.com](http://www.overheaddoor.com) (or approved equal).
- B. Products of other manufacturers will be considered for acceptance provided they equal or exceed the material requirements and functional qualities of the specified product. Requests for Architect's approval must be accompanied by the "Substitution Request Form" and complete technical data for evaluation. All materials for evaluation must be received by the Project Manager and Specification Department at least 10 days prior to bid due date. Additional approved manufacturers will be issued by Addendum.

2.02 MANUFACTURED UNITS:

- A. Model "652" aluminum rolling counter shutter as manufactured by Overhead Door (or approved equal).

2.03 CURTAIN:

- A. Slats: to be extruded aluminum of 6063 alloy, in continuous lengths, interlocked to form curtains.
- B. Endlocks: each end of alternate slats to be fitted with endlocks to act as a wearing surface in the guides and to maintain slat alignment.
- C. Bottom Bar: curtain to be reinforced with an aluminum bottom bar with lift handle.
- D. Astragal: bottom bar to be furnished with a vinyl astragal to protect counter top finish.

2.04 SPRING COUNTERBALANCE:

- A. Counterbalance: housed in a steel pipe of diameter and



April 6, 2017

- wall thickness to restrict maximum deflection to .03" per foot of shutter width.
- B. Springs: to be helical torsion type designed to include an overload factor of 25% and for optimum ease of operation. Springs are to be grease packed and are to be mounted on a cold rolled steel inner shaft.
- C. Ball Bearing: sealed, to minimize wear of pipe shaft rotation around inner shaft.
- 2.05 BRACKET PLATES:
  - A. Bracket Plates: carrying pipe counterbalancing shaft are to be no less than 1/8" thickness and are to house ends of shutter coil.
- 2.06 GUIDE ASSEMBLY:
  - A. Guides: to be extruded aluminum of 6063 alloy with integral wear strips for contact with slats.
  - B. Retainer: guide construction to have integral curtain retainer.
  - C. Trim: to be of same extruded material as guides to cover fasteners.
- 2.07 HOODS:
  - A. Hoods: to house coil are to be rectangular and fabricated of .040" aluminum. Square.
- 2.08 LOCKING:
  - A. Slide Bolts: on bottom bar to provide locking for shutter.
- 2.09 FINISH:
  - A. Aluminum Surfaces: to have a 204r1 clear anodized finish.
- PART 3 - EXECUTION
- 3.01 EXAMINATION:
  - A. Verify that opening sizes, tolerances and conditions are acceptable.
- 3.02 INSTALLATION:
  - A. Install shutter unit assembly in accordance with manufacturer's instructions.
  - B. Use anchorage devices to securely fasten assembly to wall construction and building framing without

April 6, 2017

- distortion or stress.
- C. Securely brace components suspended from structure.
- D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- E. Coordinate installation of sealants and backing materials at frame perimeter.

3.03 ERECTION TOLERANCES:

- A. Maintain dimensional tolerances and alignment with adjacent work.
- B. Maximum variation from plumb: 1/16 inch.
- C. Maximum variation from level: 1/16 inch.
- D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch per 10 ft straight edge.

3.04 ADJUSTING:

- A. Adjust shutter, hardware and operating assemblies.

3.05 CLEANING:

- A. Clean shutter and components.
- B. Remove labels and visible markings.

END OF SECTION 08330

April 6, 2017

SECTION 08410 - FRP DOORS-ALUMINUM FRAMING SYSTEMS

1. GENERAL

1.1. RELATED DOCUMENTS

- A. Drawings and General Provisions of contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work in this section.

1.2. DESCRIPTION OF WORK

- A. The extent of each type of door and frame is shown on the drawings and in schedules.
- B. The following types of doors and frames are required:
  - 1. FRP flush doors
  - 2. Aluminum frames associated with flush FRP doors.

1.3. RELATED WORK SPECIFIED ELSEWHERE

- A. For Finish Hardware, see Section 08710.
- B. For Sealants & Caulking, see Section 07920.
- C. For Glass & Glazing, see Section 08800.

1.4. SYSTEM PERFORMANCE

FRP FLUSH DOORS

- A. Provide door assemblies that have been designed and fabricated to comply with requirements for system performance characteristics listed below, as demonstrated by testing manufacturer's corresponding stock systems according to test methods designated.
- B. Thermal Transmission (exterior doors); U-value of not more than 0.09 (BTU/Hr. x sf x degrees F.) per AAMA 1503.01.

April 6, 2017

C. Flame Spread/Smoke Developed: Provide FRP doors with the following ratings in accordance with ASTM E 84-79a: Flame Spread: Exterior faces not greater than 145 (Class C); interior faces not greater than 10 (Class A). Smoke Developed: Exterior faces not greater than 345 (Class C); interior faces not greater than 320 (Class A).

D. Additional Criteria: Provide FRP doors with the following performance:

ASTM D 256 - nominal value of 13.5

ASTM D 1242 - nominal value of .23 percent

ASTM D 570 - nominal value of .20 to .40 percent

ASTM D 2583 - nominal value of 50

1.5. QUALITY ASSURANCE - ALL BIDDERS SHALL BE FACTORY DIRECT AUTHORIZED DISTRIBUTORS OF THE SPECIFIED PRODUCTS.

A. Standards: Comply with the requirements and recommendations in applicable specification and standards by NAAMM and AAMA, including the terminology definitions and specifically including the "Entrance Manual" by NAAMM, except to the extent more stringent requirements are indicated.

B. Performance: A minimum ten year record of production of frames, doors and panels and completion of similar projects in type and size.

C. Instruction: The manufacturer or his representative will be available for consultation to all parties engaged in the project including instruction to installation personnel.

D. Field Measurement: Field verify all information prior to fabrication and furnish of materials. Furnish and install materials omitted due to lack of verification at no additional cost to Owner.

E. Regulation and Codes: Comply with the current edition in force at the project location of all local, state and federal codes and regulations, including the Americans with Disabilities Act of 1992.

April 6, 2017

1.6. SUBMITTALS

A. Product Data: Submit Manufacturer's product data, specifications and instructions for each type of door and frame required in accordance with Section 01340 Submittals and the following:

1. Include details of core, stile and rail construction, trim for lites and all other components.
2. Include details of finish hardware mounting.
3. Include sample of each aluminum alloy to be used on this project. Where normal finish color and texture variations are expected, include two or more samples to show the range of such variations.
4. Include one sample of typical fabricated section, showing joints, fastenings, quality of workmanship, hardware and accessory items before fabrication of the work proceeds.

B. Submit shop drawings for the fabrication and installation of the doors and frames, and associated components. Details to be shown full scale. Include glazing details and finish hardware schedule.

1.7. PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to jobsite in their original, unopened packages with labels intact. Inspect materials for damage and advise manufacturer immediately of any unsatisfactory materials.
- B. Package door assemblies in individual corrugated cartons so no portion of the door has contact with the outer shell of the container. Package and ship frames preassembled to the greatest possible extent.

April 6, 2017

1.8. PROJECT WARRANTY

- A. Provide a written warranty signed by manufacturer, installer and contractor, agreeing to replace, at no cost to the Owner, any doors, frames or factory hardware installation which fail in materials or workmanship, within the warranty period. Failure of materials or workmanship includes: excessive deflection, faulty operation of entrances, deterioration of finish, or construction in excess of normal weathering and defects in hardware installation. The minimum time period of warranty is ten (10) years from acceptance.

2. PRODUCTS

2.1. ACCEPTABLE MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products of the following:
  - 1. Special-Lite, Inc., Decatur, Michigan.
  - 2. Or approved equal

2.2. MATERIALS AND ACCESSORIES

- A. Aluminum Members: Alloy and temper as recommended by manufacturer for strength, corrosion resistance and application of required finish and control of color; ASTM B 221 for extrusions, ASTM B 209 for sheet/plate with aluminum wall thickness of 0.125".
- B. Components: Furnish door and frame components from the same manufacturer. "Splitting" of door and frame components is not permitted.
- C. Fasteners: Aluminum, non-magnetic stainless steel or other non-corrosive metal fasteners, guaranteed by the manufacturer to be compatible with the doors, frames, stops, panels, hardware, anchors and other items being fastened. For exposed fasteners (if any) provide oval Phillips head screws with finish matching the item to be fastened.

April 6, 2017

- D. Glazing Gaskets: For glazing factory-installed glass, and for gaskets which are factory-installed in "captive" assembly of glazing stops. Manufacturer's standard stripping of molded neoprene, complying with ASTM D 2000 (Designation 2BC415 to 3BC620), or molded PVC complying with ASTM C 509 Grade 4.

### 2.3. FABRICATION

- A. Sizes and Profiles: The required sizes for door and frame units, and profile requirements are shown on the drawings.
- B. Coordination of Fabrication: Field measure before fabrication, and show recorded measurements on final shop drawings.
- C. Complete the cutting, fitting, forming, drilling and grinding of all metal work prior to assembly. Remove burrs from cut edges, and ease edges and corners to a radius of approximately 1/64".
- D. No welding of doors or frames is acceptable.
- E. Maintain continuity of line and accurate relation of planes and angles. Secure attachments support at mechanical joints, with hairline fit at contacting members.
- F. Attachment of all hardware shall be made using machine screws which are supplied by the manufacturer.
- G. All holes shall be drilled and tapped using the recommended drill size for the tap required.
- H. Frames stops shall be applied stops, Minimum 5/8" high x Minimum 1 1/4" wide.
- I. Door attachment points shall be minimum of 1/8" thickness.
- J. Where hardware is to be attached to frame stop (Example: exit device strike, door closer shoe, O.H. stop & Etc.) a piece of solid bar stock aluminum sized to fill the frame stop void x 18" long shall be securely attached to the frame tube

April 6, 2017

K. Where it is not practical to have solid bar stock reinforcement at attachment points, use ``RIV-NUTS for attachment of hardware items.

#### 2.4. FIBERGLASS REINFORCED POLYESTER FRP FLUSH DOORS

##### A. Materials and Construction

1. Construct 1-3/4'' thickness doors of 6063 T5 aluminum alloy stiles and rails minimum 25/16'' depth. Provide joinery of 3/8'' diameter full width tie rods through extruded splines top and bottom as standard .125'' tubular shaped stiles and rails reinforced to accept hardware as specified.
2. Extrude top and bottom rail legs for interlocking continuous rail rigidity weather bar. Lock face sheet material in place with extruded interlocking edges to be flush with aluminum stiles and rails.
3. Door face sheeting. Spec Lite 3, 120'' thickness fiberglass reinforced polyester. SL17 doors with pebble-like embossed pattern. Color: As selected by Architect.
4. Core of Door Assembly: Minimum five pounds per cubic foot density poured-in-place polyurethane free of CFC and HCFC. Minimum ``R'' value of 11. Meeting stiles on pairs of doors, and weather bars with nylon brush weather-stripping.
5. Manufacture doors with cutouts for vision-lites, louvers or panels as scheduled. Factory furnish and install all glass, louvers and panels prior to shipment.
6. Premachine doors in accordance with templates from the specified hardware manufacturers and approved hardware schedule. Factory install hardware.
7. Furnish FRP doors with Flush Pull SL86, color as selected by Architect.



April 6, 2017

8. Provide door with adjustable bottom brush insert.

## 2.5 ALUMINUM FRAMING SYSTEMS

### A. Tubular Framing

1. Framing system from the door manufacturer of the size and type shown. .125" minimum wall thickness and type 6063-T5 aluminum alloy .625" high applied stops with screws and weather-stripping. Frame members are to be box type with four (4) enclosed sides. Open back framing will not be acceptable.
2. Caulk joints before assembling frame members. Secure joints with fasteners and provide a hairline butt joint appearance. Prefit doors to frame assembly at factory prior to shipment. Field fabrication of framing using "stick" material is not acceptable.
3. Applied stops for side, transom and borrowed lites and panels, with fasteners exposed on interior or unsecure portion only. Premachine and reinforce frame members for hardware in accordance with manufacturer's standards and the approved hardware schedule. Factory install hardware.
4. Anchors appropriate for wall conditions to anchor framing to wall materials. A minimum of five anchors up to 7'4" on jamb members, and one additional anchor for each foot over 7'4". Secure head and sill members of transom, sidelites and similar conditions.
5. Factory preassemble sidelites to the greatest extent possible, and mark frame assemblies according to location.

## 2.6 GLAZING

### A. Design system for replacement of glass.

1. Manufacturer's standard flush glazing system of recessed channels and captive glazing gaskets or applied stops as shown.

April 6, 2017

2. Allow for thermal expansion on exterior units.
3. Glass as shown and factory glazed into doors.

## 2.7 ALUMINUM FINISHES

- A. All exposed aluminum to be factory finished with AZKO Nobel ``Trinar'', color to be determined from manufacturer's standard and custom colors by Architect.

## 3. EXECUTION

### 3.1. Installation

- A. Comply with manufacturer's recommendations (maintain 3/16'' gap between leafs of pairs of doors) and specifications for the installation of the doors and frames. Factory install hardware, glass and louvers in doors. Factory assemble sidelites and transoms to the greatest extent possible.
- B. Set units plumb, level and true to line, without warp or rack of doors or frames. Anchor securely in place. Separate aluminum and other metal surfaces with bituminous coatings or other means as approved by architect.
- C. Set thresholds in a bed of mastic and backseal.
- D. Clean surfaces promptly after installation of doors and frames, exercising care to avoid damage to the protective coatings.
- E. Ensure that the doors and frames will be without damage or deterioration (other than normal weathering) at the time of acceptance.
- F. Provide Owner with all adjustment tools and instruction sheets. Arrange an inservice session to Owner at Owner's convenience. Provide a minimum one-year written warranty on all labor related to this section. Any workmanship which is defective or deficient shall be corrected to the Owner's satisfaction and at no additional cost to the Owner.

END OF SECTION 08410

April 6, 2017

SECTION 08520 - ALUMINUM WINDOWS - SLIDING WINDOWS

PART 1 - GENERAL

1.01 General:

- A. Standards: Comply with applicable requirements for aluminum windows, terminology and standards of performance, and fabrication workmanship specified in AAMA/WDMA/CSA 101/i.s.2/A440-05.
- B. Submittals: Submit product data, including half-size details of each typical section, showing glazing details. Submit specific information on operating parts, hardware, weatherstripping, finishes for aluminum and preglazed construction.
  - 1. Submit finish samples of 12" long extrusions of typical sections.
  - 2. Submit shop drawings showing elevations, details and anchorages for work not detailed in product data.

1.02 Work Included:

- A. Furnish and install aluminum architectural windows complete with hardware and related components as shown on drawing and specified in this section.
- B. All operable windows shall be EFCO® Series 6555 Thermal HS-AW55 Horizontal Sliding (Or approved equal).
- C. Windows Specification and design details are based on EFCO model number as indicated above. Other manufacturers that are acceptable but still must meet all comparable design details, size, requirements are:
  - 1. Kawneer
  - 2. Other manufacturers requesting approval to bid their product as an equal must submit the following information fifteen days prior to close of bidding.
    - a. A sample window, 3'-0" x 2'-0" single unit, as per requirements of architect.
    - b. Test reports documenting compliance with requirements of Section 1.04.
- D. Glass and Glazing
  - 1. Reference Section 08800 for Glass and Glazing.

1.03 Related Work

April 6, 2017

- A. Section 08800 - Glass and Glazing
- B. Section 07910 - Joint Filler & Gasket
- C. Section 07920 - Sealant and Caulking

1.04 Testing and Performance Requirements

A. Test Units

- 1. Air, water and structural test unit shall conform to requirements set forth in AAMA/NWWDA 101/I.S.2/NAFS-02 and manufacturers standard locking /operating hardware and insulated glazing configuration.
- 2. Thermal test unit sizes shall be 6'-0" x 4'-0". Unit shall consist of a single horizontal sliding window.

B. Test Procedures and Performances

- 1. Windows shall conform to all AAMA/NWWDA 101/I.S.2/NAFS-02 requirements for the window type referenced in 1.02B. In addition, the following specific performance requirements shall be met.
- 2. Life Cycle Testing
  - a. Test in accordance with AAMA 910. There shall be no damage to fasteners, hardware parts, support arms, activating mechanisms, or any other damage that would cause the window to be inoperable. Air infiltration and water resistance tests shall not exceed specified requirements.
- 3. Air Infiltration Test
  - a. With window sash closed and locked, test unit in accordance with ASTM E 283 at a static air pressure difference of 6.24 psf (299 Pa).
  - b. Air infiltration shall not exceed .18 cfm/SF (.91 l/s•m<sup>2</sup>) of unit.
- 4. Water Resistance Test
  - a. With window sash closed and locked, test unit in accordance with ASTM E 331/ASTM E 547 at a static air pressure difference of 15.0 psf (718 Pa).
  - b. There shall be no uncontrolled water leakage.
- 5. Uniform Load Deflection Test
  - a. With window sash closed and locked, test unit in accordance with ASTM E 330 at a static air pressure difference of 55.0 psf (2633 Pa), positive and negative pressure.
  - b. No member shall deflect over L/175 of its span.

April 6, 2017

6. Uniform Load Structural Test
  - a. With window sash closed and locked, test unit in accordance with ASTM E 330 at a static air pressure difference of 85.5 psf (4094 Pa), both positive and negative.
  - b. At conclusion of test there shall be no glass breakage, permanent damage to fasteners, hardware parts, support arms or actuating mechanisms, nor any other damage that would cause the window to be inoperable.
7. Forced Entry Resistance
  - a. Windows shall be tested in accordance to ASTM F 588 or AAMA 1302.5 and meet the requirements of performance level 10.
8. Condensation Resistance Test (CRF)
  - a. With ventilators closed and locked, test unit in accordance with AAMA 1503.1.
  - b. Condensation Resistance Factor (CRF) shall not be less than 60 (frame) and 62 (glass) when glazed with 1" (25 mm) insulated - 1/4" (6 mm) clear, 1/2" (12 mm) air, 1/4" (6 mm) clear glass.
9. Thermal Transmittance Test (Conductive U-Value)
  - a. With ventilators closed and locked, test unit in accordance with AAMA 1503.1.
  - b. Conductive thermal transmittance (U-Value) shall not be more than 0.62 BTU/hr•ft<sup>2</sup>•°F (3.52 W/m<sup>2</sup>•K) when glazed with 1" (25 mm) insulated - 1/4" (6 mm) clear, 1/2" (12 mm) air, 1/4" (6 mm) clear glass.
10. Thermal Transmittance Test (Conductive U-Value)
  - a. With ventilators closed and locked, test unit in accordance with NFRC-102.
  - b. Conductive thermal transmittance (U-Value) shall not be more than 0.61 BTU/hr•ft<sup>2</sup>•°F (3.46 W/m<sup>2</sup>•K) when glazed with 1" (25 mm) insulated - 1/4" (6 mm) clear, 1/2" (12 mm) air, 1/4" (6 mm) clear glass.

1.05 Quality Assurance

- A. Provide test reports from AAMA accredited laboratories

April 6, 2017

certifying the performance as specified in 1.04.

- B. Test reports shall be accompanied by the window manufacturer's letter of certification, stating the tested window meets or exceeds the referenced criteria for the appropriate AAMA/NWDA 101/I.S.2/NAFS-02 window type.

1.06 Submittal

- A. Contractor shall submit shop drawings; finish samples, test reports, and warranties.
  - 1. Samples of materials as may be requested without cost to Owner, i.e., metal, glass, fasteners, anchors, frame sections, mullion section, corner section, etc.

1.07 Warranties

A. Total Window System

- 1. The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total window installation which includes that of the windows, hardware, glass (including insulated units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air, water, and structural adequacy as called for in the specifications and approved shop drawings.
- 2. Any deficiencies due to such elements not meeting the specifications shall be corrected by the responsible contractor at their expense during the warranty period.

B. Material and Workmanship

- 1. Per AAMA standard 601, provide written guarantee against defects in material and workmanship.
- 2. Warranty period shall be for 5 years from the date of final shipment.

C. Glass

- 1. Provide written warranty for insulated glass units, that they will be free from obstruction of vision as a result of dust or film formation on the internal glass surfaces caused by failure of the hermetic seal due to defects in material and

April 6, 2017

workmanship.

2. Warranty period shall be for 10 (ten) years.

D. Organic finish

1. Provide organic finish and warranty based on AAMA standard 2605.

PART 2 - PRODUCTS

2.01 Materials

A. Aluminum

1. Extruded aluminum shall be 6063-T5 or T6 alloy and tempered.

B. Hardware

1. Concealed plunger lock in the meeting rail with a flush mounted actuating handle.
2. Sash shall ride on steel ball bearing rollers and a raised track, so dirt will not interfere with normal operation.

C. Weather-Strip

1. All primary weather-strip shall be Q-Lon® or equal.

D. Glass

1. Reference Section 08800 Glass and Glazing.

E. Thermal Barrier

1. All exterior aluminum shall be separated from interior aluminum by a rigid, structural thermal barrier. For purposes of this specification, a structural thermal barrier is defined as a system that shall transfer shear during bending and, therefore, promote composite action between the exterior and interior extrusions.
2. No thermal short circuits shall occur between the exterior and interior.
3. The thermal barrier shall be 2 thermal struts, consisting of two glass reinforced polyamide nylon, or equal, mechanically crimped in raceways extruded in the exterior and interior extrusions.
4. Poured and debridged urethane thermal barriers shall not be permitted.

April 6, 2017

- F. Aluminum Extrusions: Provide alloy and temper recommended by the window manufacturer for strength, corrosion-resistance, and application of required finish, but not less than 22,000 psi ultimate tensile strength and not less than 0.062" thickness at any location for main frame and sash members. Frame sill members shall have a minimum wall thickness of 0.94".
- G. Fasteners: Provide aluminum, non-magnetic stainless steel, epoxy adhesive, or other materials warranted by the manufacturer to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors and other components of window units.
1. Where fasteners screw-anchor into aluminum less than 0.125" thick, reinforce the interior with aluminum or non-magnetic stainless steel to receive screw threads, or provide standard non-corrosive pressed-in splined grommet nuts.
  2. Except where unavoidable for application of hardware, do not use exposed fasteners. For application of hardware, use fasteners that match finish of member or hardware being fastened, as appropriate.
- H. Glazing Stops: Provide screw-applied or snap-on glazing stops (beads), coordinated with glass selection and glazing system indicated. Finish glazing stops to match window units.
- I. Insect Screens: Provide the manufacturer's standard aluminum framed units for each operable sash, with 18 x 14 replaceable mesh and vinyl retainer spline. Modify window to allow screen to be installed on inside face of window.
1. Provide coated aluminum mesh, 0.013" wire, complying with FS RR- W-365, Type VII.

2.02 Fabrication:

A. General

1. All aluminum frame and sash extrusions shall have a minimum wall thickness of .062". Frame sill members shall have a minimum wall thickness of .094".
2. Depth of frame shall not be less than 3 7/8".
3. Mechanical fasteners, welded components, and hardware items shall not bridge thermal barriers. Thermal barriers shall align at all frame and vent corners.
4. All frame and vent members shall be able to accommodate



April 6, 2017

separate interior and exterior finishes and colors.

B. Design Requirements: Comply with air infiltration, water penetration and structural performance requirements indicated in AAMA 101-85 for the type, grade and performance class of window units required.

1. The "Performance Class Number" included as a part of the window designation system is the actual design pressure in pounds per sq. ft. used to determine the structural test pressure and the water test pressure.
2. Where the required design pressure exceeds the minimum for the specified window grade, comply with requirements of AAMA 101-85, Section 3, "Optional Performance Classes" for higher than minimum performance class.
3. Design wind velocity at the project site is 90 mph.

C. Sizes and Profiles: Required sizes for window units and profile requirements are indicated on the drawings. Variable dimensions are indicated along with maximum and minimum dimensions as required to achieve design requirements and coordination with other work.

D. Thermal-Break Construction: Fabricate aluminum window units with integrally concealed low conductance thermal barrier, located between exterior materials and members exposed on the interior, in a manner that eliminates direct metal-to-metal contact.

1. Subframes, Mullions: Provide extruded or roll-formed aluminum, welded fabrication where possible.
2. Provide weepholes and internal water passages to conduct infiltrating water to the exterior.

E. Frame

1. Frame components shall be mechanically fastened.
2. Frame and sash shall have a continuous interlock at the meeting rail.

F. Sash

1. Sash vertical members shall telescope into the sash horizontals and be mechanically fastened.
2. The sash shall be single or double weather-stripped.

G. Screens

April 6, 2017

1. Half screens only shall be permitted. The screen shall not be surface mounted.
2. Screen frames shall be extruded aluminum.
3. Screen mesh shall be aluminum.

H. Glazing

1. All lites (both sash and fixed) of the horizontal sliding window shall be inside glazed and weeped.
2. All units shall be glazed with the manufacturer's standard sealant process provided the glass is held in place by a removable, extruded aluminum, glazing bead. The glazing bead must be isolated from the glazing material by a gasket.
3. Preglazed Fabrication: Preglaze window units at the factory where possible and practical for applications indicated. Comply with glass and glazing requirements of the "Glass and Glazing" sections of these specifications, and AAMA 101-85. This Contractor is to provide 1" insulating glass.
4. Glass: Refer to Spec Section 08800 Glass & Glazing

2.03 ALUMINUM FINISH

- A. Fluoropolymer Coating (70% PVDF): Pretreat aluminum surfaces as recommended by manufacturer of coating, including conversion coating. Apply 2-coat system and bake coatings at processing plant in accordance with manufacturer's instructions to match color and specular gloss of Architect's sample, and to comply with AAMA 2605.1 and the following:
  1. Dry Film Thickness: Not less than 1.2 mils as proven by suitable tests on representative coupon samples prepared during course of application.
  2. Color selected by Architect from Manufacturer's standard and/or custom colors.

PART 3 - EXECUTION

3.01 General

- A. Anchor window units securely in place, with permanent separations to prevent electrolytic corrosion. Seal the entire perimeter of each unit as shown; comply with applicable requirements of the "Joint Sealant" section.
- B. Adjust and lubricate operating sash and hardware for proper operation.

April 6, 2017

- C. Clean aluminum surfaces promptly after installation; do not damage protective coating. Repair minor damage to the finish. Clean glass promptly after installation.

### 3.02 Inspection

#### A. Job Conditions

- 1. Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface, and are in accordance with approved shop drawings.

### 3.03 Installation

- A. Use only skilled tradesmen with work done in accordance with approved shop drawings and specifications.
- B. Plumb and align window faces in a single plane for each wall plane, and erect windows and materials square and true. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified wind loads.
- C. Adjust windows for proper operation after installation.
- D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections and at opening perimeters. Wipe off excess material and leave all exposed surfaces and joints clean and smooth.

### 3.04 Field Testing

- A. Windows shall be field tested in accordance with AAMA 502, "Voluntary Specification for Field Testing of Window and Sliding Glass Doors," using Test Method A.
  - 1. Test one additional windows(s) or two percent of the window installation whichever is greater, for air infiltration and water penetration as specified.
  - 2. Air infiltration tests shall be conducted at the same uniform static test pressure as the laboratory unit. The maximum allowable rate of air leakage shall not exceed .15 times the maximum allowable laboratory performance specified in the testing criteria listed in Section 1.04 A.1 for any configuration.
  - 3. Water penetration tests shall be conducted at a static test pressure of 2/3 of the laboratory test performance values for hardware and glazing types consistent with the laboratory test unit such as

April 6, 2017

product size, configuration, hardware selected and glazing variations. The field test water test pressure shall not be less than  $\frac{2}{3}$  the minimum allowable laboratory performance specified in the testing criteria listed in Section 1.04 A.1 for any configuration.

4. Cost for all successful tests, both original and retest shall be paid by the Owner. All unsuccessful tests, both original and retest, shall be paid by the responsible Contractor.
5. Testing shall be by an AAMA accredited testing agency selected by the Architect and window manufacturer and employed by the responsible Contractor.

### 3.05 Anchorage

- A. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified wind loads.

### 3.06 Protection and Cleaning

- A. After completion of window installation, windows shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc. Protection from this point shall be the responsibility of the General Contractor.

END OF SECTION 08520

April 6, 2017

SECTION 08710 - DOOR HARDWARE

PART 1 - GENERAL

1.1 Refer to "General and Special Conditions", and "Instructions to Bidders", Division 1 of Specifications. Requirements of these Sections and the project drawings shall govern work in this section.

1.2 Work Included:

A. Furnish all items of Finish Hardware specified, scheduled, shown or required herein except those items specifically excluded from this section of the specification.

B. Related work:

1. Division 1 - General Requirements
2. Section 06100 - Carpentry
3. Section 08112 - Hollow Metal Work
4. Section 08210 - Wood Doors
5. Section 08410 - Aluminum Framed Doors
6. Division 16 - Smoke Detection Systems
7. Division 16 - Security Access Systems

C. Specific Omissions: Hardware for the following is specified or indicated elsewhere, unless specifically listed in the hardware sets:

1. Cabinet Hardware.
2. Signs, except as noted.
3. Chain link and wire mesh doors and gates
4. Access doors and panels
5. Overhead doors

1.3 Quality Assurance

A. Requirements of Regulatory Agencies:

1. Furnish finish hardware to comply with the requirements of laws, codes, ordinances, and regulations of the governmental authorities having jurisdiction where such requirements exceed the requirements of the Specifications.

April 6, 2017

2. Furnish finish hardware to comply with the requirements of the regulations for public building accommodations for physically handicapped persons of the governmental authority having jurisdiction and to comply with Americans with Disabilities Act.
3. Provide hardware for fire-rated openings in compliance with NFPA 80 and state and local building code requirements. Provide only hardware that has been tested and listed by UL for types and sizes of doors required and complies with requirements of door and door frame labels.

B. Hardware Supplier:

1. Shall be an established firm dealing in contract builders' hardware. He must have adequate inventory, qualified personnel on staff and be located within 100 miles of the project. The distributor must be a factory-authorized dealer for all materials required. The supplier shall be or have in employment an Architectural Hardware Consultant (AHC).

C. Electrified Door Hardware Supplier:

1. Shall be an experienced door hardware supplier who has completed projects with electrified door hardware similar in material, design, and extent to that indicated for this project, whose work has resulted in construction with a record of successful in-service performance, and who is acceptable to manufacturer of primary materials.
2. Shall prepare data for electrified door hardware, including shop drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this project.
3. Shall have experience in providing consulting services for electrified door hardware installations.

D. Pre-installation Meeting:

1. Before hardware installation, General Contractor will request a hardware installation meeting be conducted on the installation of hardware; specifically that of

April 6, 2017

locksets, closers, exit devices, overhead stops and coordinators. Manufacturer's representatives of the above products, in conjunction with the hardware supplier for the project, shall conduct the meeting. Meeting to be held at job site and attended by installers of hardware for aluminum, hollow metal and wood doors. Meeting to address proper coordination and installation of hardware, per finish hardware schedule for this specific project, by using installation manuals, hardware schedule, templates, physical product samples and installation videos.

2. When any electrical or pneumatic hardware is specified this meeting shall also include the following trades/installers: Electrical, Security, Alarm systems and Architect.
3. Convene one week or more prior to commencing work of this Section.
4. The Hardware Supplier shall include the cost of this meeting in his proposal.

E. Manufacturer:

1. Obtain each type of hardware (latch and locksets, hinges, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.
2. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated.

1.4 Submittals:

A. Hardware Schedule

1. Submit number of Hardware Schedules as directed in Division 1.
2. Follow guidelines established in Door & Hardware Institute Handbook (DHI) Sequence and Format for the Hardware Schedule unless noted otherwise.
3. Schedule will include the following:
  - a. Door Index including opening numbers and the assigned Finish Hardware set.

April 6, 2017

- b. Preface sheet listing category only and manufacturer's names of items being furnished as follows:

CATEGORY	SPECIFIED	SCHEDULED
Hinges	Manufacturer A	Manufacturer B
Lock sets	Manufacturer X	Manufacturer X
Kick Plates	Open	Manufacturer Z

- c. Hardware Locations: Refer to Article 3.1 B.2 Locations.
- d. Opening Description: Single or pair, number, room locations, hand, active leaf, degree of swing, size, door material, frame material, and UL listing.
- e. Hardware Description: Quantity, category, product number, fasteners, and finish.
- f. Headings that refer to the specified Hardware Set Numbers.
- g. Scheduling Sequence shown in Hardware Sets.
- h. Product data of each hardware item, and shop drawings where required, for special conditions and specialty hardware.
- i. Electrified Hardware system operation description.
- j. "Vertical" scheduling format only. "Horizontal" schedules will be returned "Not Approved."
- k. Typed Copy.
- l. Double-Spacing.
- m. 8-1/2 x 11 inch sheets
- n. U.S. Standard Finish symbols or BHMA Finish symbols.

B. Product Data:

1. Submit, in booklet form Manufacturers Catalog cut sheets of scheduled hardware.
2. Submit product data with hardware schedule.

C. Samples:

1. Prior to submittal of the final hardware schedule and prior to final ordering of finish hardware, submit one sample, if required, of each type of exposed hardware



April 6, 2017

unit, finished as required and tagged with full description for coordination with schedule.

2. Samples will be returned to the supplier. Units, which are acceptable and remain undamaged through submittal, review and field comparison procedures may, after final check of operation, be used in the work, within limitations of keying coordination requirements.

D. Key Schedule:

1. Submit detailed schedule indicating clearly how the Owner's final keying instructions have been followed.
2. Submit as a separate schedule.

E. Electrified Hardware Drawings:

1. Submit elevation drawings showing relationship of all electrical hardware components to door and frame. Indicate number and gage of wires required.
  - a. Include wiring drawing showing point to point wire hook up for all components.
  - b. Include system operations descriptions for each type of opening; describe each possible condition.

- F. Submit to General Contractor, the factory order acknowledgement numbers for the various hardware items to be used on the project. The factory order acknowledgement numbers shall help to facilitate and expedite any service that may be required on a particular hardware item. General Contractor shall keep these order acknowledgement numbers on file in the construction trailer.

1.5 Product Delivery, Storage, and Handling:

- A. Label each item of hardware with the appropriate door number and Hardware Schedule heading number, and deliver to the installer so designated by the contractor.

1.6 Warranties:

- A. Refer to Division 1 for warranty requirements.

April 6, 2017

- B. During the warranty period, replace defective work, including labor, materials and other costs incidental to the work. Replace work found to be defective as defined in the General Conditions.

## PART 2 - PRODUCT

### 2.1 MANUFACTURERS

- A. See Drawings
- B. Substitutions: See General Conditions.

### 2.2 Finishes:

- A. Generally, Dull Chrome, US26D / BHMA 626. Provide finish for each item as indicated in sets.

### 2.3 Templates and Hardware Location:

- A. Furnish hardware made to template. Supply required templates and hardware locations to the door and frame manufacturers.
- B. Furnish metal template to frame/door supplier for continuous hinge.
- C. Refer to Article 3.1 B.2, Locations, and coordinate with templates.

### 2.4 Cylinders and Keying:

- A. All cylinders for this project will be supplied by one supplier regardless of door type and location.
- B. The Finish Hardware supplier will meet with Architect and/or Owner to finalize keying requirements and obtain keying instructions in writing.
  - 1. Supplier shall include the cost of this service in his proposal.
- C. Provide a cylinder for all hardware components capable of being locked.

April 6, 2017

- D. Provide cylinders master and grand master keyed to existing Best system according to Owner's instructions. Provide two change keys for each cylinder, master and grand master keys as required by Owner.
- E. Provide cylinders with construction cores or keying for use during the construction period. When so directed, and in the presence of the Owner's security department or representative, convert construction cores or keying to the final system.
  - 1. Supplier shall include the cost of this service in his proposal.

### PART 3 - EXECUTION

#### 3.1 Installation

##### A. General:

- 1. Install hardware according to manufacturers installations and template dimensions. Attach all items of finish hardware to doors, frames, walls, etc. with fasteners furnished and required by the manufacture of the item.
- 2. Provide blocking/reinforcement for all wall mounted Hardware.
- 3. Reinforced hollow metal doors and frames and reinforced aluminum door and frames will be drilled and tapped for machine screws.
- 4. Solid wood doors and frames: full thread wood screws. Drill pilot holes before inserting screws.
- 5. Continuous gear hinges attached to hollow metal doors and frames and aluminum doors and frames: 12-24 x 1/2" #3 Phillips Keenform self-tapping. Use #13 or 3/16 drill for pilot.
- 6. Continuous Gear Hinges require continuous mortar guards of foam or cardboard 1/2" thick x frame height, applied with construction adhesive.
- 7. Install weather-strip gasket prior to parallel arm closer bracket, rim exit device or any stop mounted hardware. Gasket to provide a continuous seal around perimeter of door opening. Allow for gasket when installing finish hardware. Door closers will require

April 6, 2017

special templating. Exit devices will require adjustment in backset.

B. Locations:

1. Dimensions are from finish floor to center line of items.
2. Include this list in Hardware Schedule.

<u>CATEGORY</u>	<u>DIMENSION</u>
Hinges	Door Manufacturer's Standard
Flush Bolt Levers	72" and 12"
Levers	Door Manufacturer's Standard
Exit Device Touchbar	Per Template
Push-Pull Units	42" to centerline of Pull
Push Plates	52"
Pull Plates	42"
Wall Stops/holders	At Head

C. Final Adjustment:

1. Provide the services of a representative to inspect material furnished and its installation and adjustment, to make final hardware adjustment, and to instruct the Owner's personnel in adjustment, care and maintenance of hardware.
2. Locksets, closers and exit devices shall be inspected by the factory representative and adjusted after installation and after the HVAC system is in operation, to insure correct installation and proper adjustment in operation. The manufacturer's representative shall prepare a written report stating compliance, and also recording locations and kinds of noncompliance. The original report shall be forwarded to the Architect with copies to the Contractor, hardware distributor, hardware installer and building owner.

D. Technical and Warranty Information:

1. At the completion of the project, the technical and warranty information coalesced and kept on file by the General Contractor shall be given to the Owner or

April 6, 2017

Owner's Agent. In addition to both the technical and warranty information, all factory order acknowledgement numbers supplied to the General Contractor/Construction Manager during the construction period shall be given to the Owner or Owner's Agent. The warranty information and factory order acknowledgement numbers shall serve to both expedite and properly execute any warranty work that may be required on the various hardware items supplied on the project.

2. Submit to General Contractor, two copies each of parts and service manuals and two each of any special installation or adjustment tools. Include for locksets, exit devices, door closers and any electrical products.

GENERAL NOTES:

1. Contractor shall verify all existing field conditions and notify architect immediately if that which exists differs from that which is shown on drawings.
2. All work to comply with current Federal, State and Local codes, laws and ordinances.  
The requirements of ICC/ANSI A117.1 and the Americans with disabilities act (ADA) are to be fully satisfied. All work shall meet the most stringent requirements of both including, but not limited to clearances, limitations, accessories, etc.
3. These drawings are prepared in accordance with the limited services for which the architect was contracted. The architect makes no representation that the interpretation of these documents will result in complete compliance with the ADA.
4. All doors required to be labeled shall be set in labeled frames and identified with UL label and be provided with approved self-closing devices and positive latching hardware.
5. All designated exit doors shall be equipped with the required egress hardware.
6. Furnish hardware as scheduled without substitution, no alternates will be approved.
7. Provide PDQ Cylinders, Combined IC Cores and keys; keyed to Master System. Include key conference and key system

April 6, 2017

- schedule. Where "PDQ2" is indicated, furnish a keyed core and two cut keys for each locking device specified; plus six master keys and two control keys.
8. Provide one each Telkee Regent Series Wall Key Cabinet. Provide a Complete System; including all accessories -key gathering envelopes, hook labels, permanent key tags, temporary key tags, signature receipt forms, visible index and instruction book. Provide with capacity for 150 percent of the number of locks required for the project.
  9. Furnish and provide all necessary reinforcements, brackets, fasteners, spacers and fillers to provide a complete functioning opening.
  10. Provide complete shop drawings, submittals and cut sheets complying with DHI prescribed methods and vertical format double spaced hardware schedule.
  11. All access control, control modules, to be furnished and installed by the Security Integrator as contracted by the owner under separate contract.  
Access Control Door Hardware & Equipment specified in this section is to be furnished by hardware distributor under this section and installed by carpenter contractor.  
Line voltage, circuits, cable and installation of power supplies for card readers, controllers and access control peripherals to be installed under a separate Security Section.
  12. Hardware Sets: See Drawing A10

END OF SECTION 08710

April 6, 2017

SECTION 08800 - GLASS AND GLAZING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

- A. The extent of glass and glazing work is shown on the drawings.
- B. The required applications of glass and glazing include (but are not necessarily limited to) the following:
  - 1. Glazing interior openings.
  - 2. Glazing interior doors.
  - 3. Glazing aluminum windows.
  - 4. Glazed FRP doors.
- C. Related Work Specified Elsewhere:
  - 1. Aluminum Windows: Section 08520.
  - 2. Fire Rated Glass: Section 08810.

1.03 QUALITY ASSURANCE:

- A. Prime Glass Standard: Comply with FS DD-G-451.
- B. Heat-Treated Glass Standard: Comply with the following as applicable.
  - 1. Consumer Product Safety Commission 16 CFR 1201.
  - 2. Industry Standards ANSI Z97.1.
- C. Insulating Glass Seal Standard: Comply with proposed standard ASTM E6-P-3, Test Methods P1 and P2.
- D. Manufacturers: Provide each type of glass and primary sealant/gasket from a single manufacturer with not less than 5 years of successful experience in the production of materials similar to those required.

April 6, 2017

- E. Installer (Glazier): Firm with not less than five (5) years of successful experience in glazing work similar to required work.

1.04 SUBMITTALS:

A. Product Data:

1. Submit manufacturer's product specifications, including documentation to compliance with requirements and instructions for handling, storing, installing, cleaning and protecting each type of glass and glazing materials.

B. Samples:

1. Submit two (2) samples of each type of glass and glazing material required, except for single-pane clear glass (including annealed and tempered). Submit 12" square glass samples and 12" lengths of installed (mocked-up) glazing materials.
  - a. Submit insulating glass samples with completed edge-seal construction, but hermetic seal need not be maintained.

C. Warranties:

1. Warranty on Insulating Glass Units: Provide written warranty signed by fabricator (manufacturer) and countersigned by Contractor/Installer agreeing to within 10 years from date of substantial completion replace glass units with defective hermetic seal of air spaces (but not including that due to glass breakage); defined to include intrusion of dirt or moisture, internal condensation or fogging at temperature above -20 degrees F., deterioration of protected internal glass coatings resulting from seal failure, and other visual evidence of seal failure or performance; provide the manufacturer's printed and submitted instructions for handling, protecting, and maintaining units that have been adhered to during the warranty period.
2. Warranty on Laminated Glass: Provide written warranty signed by laminator (manufacturer) and countersigned by Contractor/Installer agreeing to within five (5) years after date of acceptance, replace glass units with defective lamination, defined to include evidence of delamination, changes in required strengths, transmittances, color, transparency, and other required performance.



April 6, 2017

1.05 PRODUCT HANDLING:

- A. Comply with manufacturer's instructions for shipping, handling, storing, and protecting glass and glazing materials. Exercise exceptional care to prevent edge damage to glass, and damage/deterioration to coatings on glass.

1.06 JOB CONDITIONS:

- A. Pre-Installation Meeting: Comply with General Requirements for pre-installation meeting of Glazier and other trades affected by glass installation.
- B. Weather: Do not proceed with glazing under adverse weather conditions. Install liquid sealants when temperatures are within lower or middle third of temperature range recommended by manufacturer.

PART 2 - PRODUCTS

2.01 GLASS

A. Non-processed Glass:

- 1. Clear Float/Plate: Type I, Class 1, Quality q3.
- 2. Tinted Glass: Select from Manufacturer's standard tints.
- 3. Laminating Film: Except as otherwise indicated, provide clear transparent permanent film of polyvinyl butyryl (PVB), not less than 30 mils thick, as adhesive plastic interlayer for laminating sheets of glass of a composition which has successfully withstood a minimum of 20 years exposure to sunlight and severe weather/temperature changes.

B. Processed Glass:

- 1. Tempered Glass: Heat treat to strengthen glass in bending to not less than 4.5 times annealed strength.
- 2. Tong Marks: Wherever the glazing system shown for the installation of tempered glass will not conceal the tong marks inherent from normal tempering processes, provide tempered glass produced by special process which eliminates tong marks.

April 6, 2017

C. Fabricated Products:

1. Laminated Glass:

- a. Laminate units at the factory using manufacturer's standard pressure-plus-heat process to produce units of the required sizes, thicknesses, and component make-up to comply with the details and performance requirements shown and specified herein. Exercise extreme precautions and plant control in the laminating process to exclude dirt and other foreign matter from the lamination, and to eliminate voids and achieve complete lamination at each glass surface.
- b. Fabricate units to proper size and shape at the factory so that no cutting, seaming, or nipping will be required for installation at the project site.
- c. Provide the following type:
  - (1) 1/4" Clear of Solexia (transparent) by PPG or approved equal consisting of:  
Exterior Glass: 1/8" tempered  
Laminating Film: 30 mils thick  
Interior Glass: 1/8" tempered glass
    - A. ``Solexia Glass``

Visible light transmission	69%
U value winter	0.47
U value summer	0.50
SHGC	0.49
Shading Coefficient	0.57
Outdoor visible light reflectance	13%
Outdoor appearance:	Light green color, low reflective glass product
  - (2) 1/4" clear:  
Exterior Glass: 1/8" clear plate tempered glass  
Laminating Film: 30 mils thick  
Interior Glass: 1/8" clear plate temp. glass

2. Insulating Glass:

- a. Fabricate and label units to match units which have been tested and certified by the Insulating Glass Certification Council in accordance with proposed standard ASTM E6-P3, Test Methods, P1 and P2 (as sponsored by the Sealed Insulating Glass Manufacturers Association); and passed tests for glass seal classification "A".

April 6, 2017

- b. Fabricate units with a permanent, hermetically sealed dry air or glass filled space of the width indicated between sheets of glass as indicated. Provide an edge seal consisting of twin primary sealant beads of silicone positioned and retained by a tubular aluminum or galvanized steel spacer-bar frame with soldered/welded sealed corners, and filled with desiccant with breather ports into sealed space; with secondary edge sealant completely encapsulating outer face of spacer bar and sealed to the opposing sheets of glass. Provide silicone elastomeric sealant as secondary edge seal.

(1) Extend secondary sealant to provide minimum of 1/16" thick elastomeric coating on edges of glass sheets in each insulating glass unit (to form a protective edge cushion).

(2) Width: Except as otherwise indicated, fabricate units with 1/2" wide air spaces.

(3) Fill air spaces by fabricator's standard process, using either gas or dry air with a maximum dew point of -20 degrees F. Exercise extreme care to exclude dirt and other foreign substances.

- c. Label each unit to show compliance with required standards and regulations, and to list generically each component including elements of edge seal. Indicate which face of unit is for exposed to exterior of weather. Provide removable label except where regulations require a permanent label.

(1) Label interior-exposed edge of spacer bar with fabricator's name and date of completing hermetic seal.

- d. Provide the following types:

(1) At all exterior locations - 1" Clear:  
Exterior Glass: 1/4" laminated ("Solexia"  
transparent by PPG)(or approved equal).  
Interior Glass: 1/2" air space  
1/4" laminated clear plate

April 6, 2017

D. Design Thickness:

1. Verify all glass thicknesses will comply with performance requirements.

E. Manufacturer of Glass: One of the following:

1. Old Castle Building Envelope
2. Saint-Gobain, North America
3. Pilkington North America, Inc.
4. PPG Industries, Inc.
5. Guardian Industries, North America
6. Viracon, Inc.
7. Or approved equal

F. Edges:

1. Polish edges wherever exposed to view.

G. Coatings:

1. Provide low emissivity (low-E) pyrolytic coating (on #3 surface of insulated units).

2.02 GLAZING SEALANTS, COMPOUNDS AND GASKETS:

- A. Colors: Provide black or other natural color where no other color is available. Where material is not exposed to view, provide manufacturer's standard color which has the best overall performance characteristics for application shown.

- B. Hardnesses shown and specified are intended to indicate general range necessary for overall performance. Consult manufacturer's technical representative to determine actual hardness recommended for conditions of installation and use. Architect will furnish information concerning anticipated glass movement related to actual glazing channel width and installation temperature upon request. Except as otherwise indicated or recommended, provide glazing materials within the following ranges of hardness (Shore A, fully cured, at 75 degrees F.):

April 6, 2017

1. 15 to 35 for elastomeric compounds and tapes used with rigid stops and frames for large glass sizes (in excess of 100 united inches). Provide material sufficiently hard to withstand exposure (if any) to abrasion and vandalism.
  2. 25 to 50 for rubber-like curing compounds used with rigid stops and frames for medium and small glass sizes (less than 100 united inches). Provide materials sufficiently hard to withstand impact where used on moving sash and doors.
  3. 35 to 60 for molded gaskets used with rigid stops and frames, depending upon strength needed for applications or insertion of units and open profile of gasket.
  4. 70 to 80 for structural gaskets (not supported by stops).
  5. Non-Elastomeric Compounds: (Shore A not applicable) 2 to 12 mm penetration for 5.0 seconds of penetrometer needle on nominally cured compound (ASTM D 2451).
- C. Compatibility: Before purchase of specified glazing materials, investigate compatibility with channel surfaces, joint fillers, and other materials in glazing channel. Provide only materials (manufacturer's recommended variation of specified materials) which are known to be fully compatible with actual installation condition, as shown by manufacturer's published data or certification.
- D. Provide size and shape of gaskets and preformed glazing units as shown, or if not shown, as recommended by manufacturer, either in published data or upon consultation with technical representative.
- E. Nonporous Bond Silicone Rubber Glazing Sealant"
1. One-part acid-type silicone rubber elastomeric sealant, complying with FS TT-S-001543, Class A, non-sag, recommended by manufacturer for non-porous exterior joint surfaces and for glazing.
  2. Products/Manufacturers: Provide one of the following:
    - a. 781 Building Sealant; Dow Corning Corporation

April 6, 2017

- b. Silicone Construction 1200 Sealant; General Electric Company
- c. Rhodorsil Sealant 3B; Rhodia Inc. Chemical Division
- d. Or approved equal

F. Preformed Butyl Rubber Glazing Sealant:

- 1. Preformed ribbon or tape (coiled with release paper) of polymerized butyl (or mixture of butyl and polyisobutylene) with inert fillers (pigments), solvent-based with minimum 95% solids, non-sag consistency, tack-free time of 24 hours or less, paintable, non-staining, pre-shimming to prevent stretch (as required by Glazier to facilitate proper application and glass installation).
- 2. Product/Manufacturer:
  - a. Polyshim Tape: Tremco, Inc.
  - b. Or approved equal
- 3. Use for exterior glazing of all glass in aluminum framing unless noted otherwise and in all interior glazing.

2.03 MISCELLANEOUS GLAZING MATERIALS:

- A. Channel Cleaner: Use type compound recommended by sealant manufacturer for channel surfaces to be cleaned.
- B. Channel Primer/Sealer: Provide type of primer or sealer recommended by sealant manufacturer for application of sealant to channel surfaces.
- C. Setting Blocks: Neoprene or other resilient blocks of 70 to 90 Shore A durometer hardness, tested for compatibility with specified glazing sealants.
- D. Spacers: Neoprene or other resilient blocks of 40 to 50 Shore A durometer hardness, adhesively backed on one face only, tested for compatibility with specified glazing sealants.
- E. Compressible Filler Rod: Closed-cell or waterproof-jacketed foam of polyethylene, butyl rubber, neoprene, polyurethane, or vinyl tested for compatibility with specified glazing sealants of 5 to 10 psi compression strength(25% deflection) as recommended by sealant manufacturers for use in glazing channel to prevent

April 6, 2017

sealant exudation from channel.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Glazier must examine framing and substrate work to receive glass and glazing materials and conditions under which glass is to be installed, and notify the Construction Manager, in writing, of conditions detrimental to proper completion of the work. Do not proceed with glazing until unsatisfactory conditions have been corrected in a manner acceptable to Glazier.

3.02 PERFORMANCE REQUIREMENTS:

- A. Watertight and airtight installation of each piece of glass is required, except as otherwise shown. Each installation must withstand normal temperature changes wind loading, and impact loading (for operating sash and doors) without failure, including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glazing materials and other defects in the work.
- B. Protect glass from edge damage during handling, installation and operation of building systems/equipment. Glass breakage during warranty period is a form of faulty material or workmanship (resulting from edge damage) unless known to result from vandalism or other causes not related to materials and workmanship.
- C. Glazing channel dimensions as shown are intended to provide for necessary minimum bite on glass, minimum edge clearance, and adequate sealant thickness with reasonable tolerances. Glazier is responsible for correct glass size for each opening within tolerances and necessary dimensions established.

3.03 INSTALLATION

A. General and Standards:

- 1. Comply with combined recommendations of glass manufacturer and manufacturer of sealants and other materials used in glazing, except where more stringent requirements are shown or specified, and except where manufacturers' technical representatives direct otherwise.

April 6, 2017

2. Unify appearance of each series of lights by setting each piece to match others as nearly as possible. Inspect each piece and set with pattern, drawn, and bow oriented in the same direction as other pieces.
3. Inspect each piece of glass immediately before installation and eliminate pieces which have observable edge damage or face imperfections.
4. Do not attempt to cut, seam, nip or abrade glass which is tempered, heat strengthened, or coated.
5. Cut and install colored (tinted) and heat absorbing glass as recommended in "Technical Services Report No. 104" (latest edition) by PPG Industries, or similar report by other glass manufacturer.
6. Comply with applicable publications by Flat Glass Marketing Association, except as shown and specified otherwise, and except as specifically recommended otherwise by the manufacturers of the glass and glazing materials.

B. Preparation of Substrate:

1. Clean the glazing channel or other framing member to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to the substrate. Remove lacquer from metal surfaces where elastomeric sealants are used.
2. Apply primer or sealer to joint surfaces where recommended by sealant manufacturer.

C. Sealant/Compound Glazing:

1. Install setting blocks of proper size in sill rabbet, locate at one-fourth of glass width measured from each jamb. Set blocks in thin course of the heel bead compound if heel bead is to be installed.
2. Provide spacers inside and out, and of proper size and spacing for glass sizes larger than 50 united inches, except where pre-shimmed tape or gaskets are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with butyl rubber sealant tape use thickness 1/32" less than final compressed thickness of tape.



April 6, 2017

3. Voids and Filler Rods: Prevent exudation of sealant or compound by forming voids or installing filler rods in channels at heel of jambs and heads (do not leave voids in sill channels), except as otherwise indicated. In general, voids or filler rods are required for insulating glass and for laminated glass larger than 75 united inches, and for other glass more than 9/32" thick or larger than 120 united inches.
4. Force sealants into channel to eliminate air pockets and voids (other than expansion voids), and to ensure complete "wetting" and bond of sealant to glass and channel surfaces.
5. Tool exposed surfaces of glazing sealants and compounds to provide a substantial "wash" away from glass.
6. When installing processed glass, exercise extraordinary care to avoid contact of glazing materials with processed surfaces, except where concealed in glazing channel. Use masking tape to ensure limitation of compounds to channel area.
7. Clean and trim excess glazing materials from glass and stops or frames promptly after installation, and eliminate stains and discolorations.

D. Gaskets and Tapes:

1. Miter cut and bond ends together at corners where gaskets are used for channel glazing so that gaskets will not pull away from corners and result in voids or leaks in glazing system.
2. Install pressurized tapes and gaskets to protrude slightly out of channel so as to eliminate dirt and moisture pockets. Trim to straight line as required.

3.04 CURE AND PROTECTION:

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

April 6, 2017

- B. Glazier shall advise the Construction Manager of procedures required for protection of glass and glazing sealants and compounds during construction period so that they will be without deterioration or damage (other than normal weathering) at time of Owner's acceptance.
  - 1. Furnish specific instruction to the Construction Manager on precautions and provisions required to prevent glass damage resulting from the alkaline wash from green concrete surfaces and similar sources of possible damage.
  - 2. Protect exterior glass from breakage immediately upon installation by attachment of crossed streamers to framing held away from glass. Do not apply markers directly on surfaces of glass. Except as otherwise indicated, remove applied labels from glass surfaces immediately after glass installation.
  - 3. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during the construction period, including pieces damaged through natural causes, accidents and vandalism.

3.05 CLEANING GLASS:

- A. Maintain glass in a reasonably clean condition during construction so that it will not be damaged by corrosive or erosive action and will not contribute (by wash-off) to deterioration of glazing materials and other work.
  - 1. Clean glass in accordance with manufacturer's recommendations. Do not use abrasive materials. On glass, do not use broken razor blades for cleaning.
- B. Wash and polish glass on both faces not more than 4 days prior to Owner's acceptance of the work in each area. Comply with glass manufacturer's recommendations.

END OF SECTION 08800

April 6, 2017

SECTION 09210 - LAWNS AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Attention is directed to Bidding and Contract Requirements, and to General and Supplemental Requirements, which are hereby made a part of this Section.

1.2 DESCRIPTION OF WORK

- A. Extent of seeded lawns is shown on drawings and by provision of this Section.
- B. Type of Work Required Includes the Following:
  - 1. Soil preparation.
  - 2. Seeding lawns.
  - 3. Mulching.
  - 4. Hydroseeding lawns (Contractor's option).
- C. Related Work Specified Elsewhere:
  - 1. Section 9220: Topsoil.

1.3 SUBMITTALS

- A. Submit seed vendor's certification for required grass seed mixture, indicating percentage by weight and percentages of purity, germination and weed seed for each grass species.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver seed and fertilizer materials in original unopened containers, showing weight, analysis and name of manufacturer. Store in a manner to prevent wetting and deterioration.

1.5 PROJECT CONDITIONS

- A. Work Notification: Notify Landscape Architect at least 7 working days prior to start of seeding operation.

April 6, 2017

- B. Project existing utilities, paving and other facilities from damage caused by seeding operations.
- C. Perform seeding work only after planting and other work affecting ground surface has been completed.
- D. Provide hose and lawn watering equipment as required.
- E. The irrigation system may be installed prior to seeing. Locate, protect, and maintain the irrigation system during seeing operations. Repair irrigation system components damaged during seeing operations at this Contractor's expense.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Topsoil for Seeding Lawn Areas: Refer to Section 9220 - Topsoil, and to drawings.
- B. Seed: Seed: Fresh, clean, and new crop seed mixture. Mixed by approved methods.
- C. Composed of the following varieties, mixed to the specified proportions by weight and tested to minimum percentages of purity and germination.
- D. Seed Mixture: Proportioned by weight as indicated below:

	<u>Proportion</u>
Kentucky Blue 90/80	40%
Pennlawn Red Fescue	20%
Creeping Red Fescue	20%
Perennial Ryegrass	20%
Spread at a rate of 7 lbs/1,000 sf	
No noxious weed seeds permitted	
- E. Fertilizer: 13-25-12. Granular, non-burning product composed of not less than 50% organic slow acting, guaranteed analysis, professional fertilizer.
- F. Ground Limestone: used if required by soil test report. Containing not less than 85% of total carbonates and ground

April 6, 2017

to such fineness than 50% will pass through a 100 mesh sieve and 90% will pass through a 20% mesh sieve.

- G. Granulated sulfur 0-0-0-90 to lower PH. Use if determined by soil tests to be necessary. Apply per soil test recommendations at specified rate.
- H. Straw Mulch: Used in crimping process only. Clean oat or whet straw well-seasoned before bailing, free from mature seed-bearing stalks or roots of prohibited or noxious weeds.
- I. Water: Free of substance harmful to seed growth. Hoses or other methods of transportation furnished by Contractor. Test for excess Alkalinity, if necessary.
- J. Wood Cellulose Fiber Mulch: Degradable green dyed wood cellulose fiber or 100% recycled long fiber pulp, free from weeds or other foreign matter toxic to seed germination and suitable to hydramulching.

AVAILABLE MANUFACTURER AND TYPE:

CONWED HYDROMULCH: CONWED CORP., ST. PAUL MN (or approved equal)

- K. Paper Mulch: Degradable paper mulch, free of foreign debris. Do not use on slopes over 30%. Available manufacturer and type NU Wool Hydro Mulch, Jennison, MI (or approved equal).
- L. Tackifier: Liquid concentrate diluted with water forming a transparent 3-dimension film like crust permeable to water and air and containing agents not toxic to seed germination.

AVAILABLE MANUFACTURER AND TYPE:

FINN HYDROSTICK, FAIRFIELD, OH (Or approved equal)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Landscape Architect must approve finish surfaces, grades,

April 6, 2017

topsoil quality, and depth. Do not start seeding work until unsatisfactory conditions are corrected.

### 3.2 PREPARATION OF SEEDED LAWN AREAS

- A. Limit preparation to areas which will be immediately seeded.
- B. Treat lawn areas if required with "Round Up" by Monsanto, per label directions to kill existing vegetation prior to seeding.
- C. Loosen topsoil of lawn areas to minimum depth of 4". Remove stones over 1" in any dimension and sticks, roots, rubbish, and extraneous matter.
- D. Grade lawn areas to a smooth, free draining even surface with a loose, moderately coarse texture. Roll and rake, remove ridges, and fill depressions as required to drain.
- E. Apply amendments to supplied or existing topsoil, if required by soil test report, at rate determined by the soil test, to adjust pH of topsoil to not less than 7.0 nor more than 6.8. Distribute evenly by machine and incorporate thoroughly into topsoil.
- F. Apply fertilizer to indicated turf areas at a rate equal to 1 lb. of actual nitrogen per 1,000 sq. ft. (43 lbs/acre). Omit this process if applied with hydroseeding process.
- G. Apply fertilizers by mechanical rotary or drop type distributor, thoroughly and evenly incorporated with soil to a depth of 1" by discing or other approved method. Fertilize areas inaccessible to power equipment with hand tools and incorporate into soil.
- H. Restore prepared areas to specified condition if eroded, settled, or otherwise disturbed after fine grading and prior to seeding.

### 3.3 INSTALLATION

- A. Seed lawns only between April 1 and June 1 and fall seeding between August 15 and October 15 or at such other times acceptable to Landscape Architect.

April 6, 2017

- B. Seed immediately after preparation of bed. Seed indicated areas within contract limits and areas adjoining contract limits disturbed as a result of construction operations.
- C. Perform seeding operations when the soil is dry and when winds do not exceed 5 miles per hour velocity.
- D. Apply seed with a rotary or drop type distributor. Install seed evenly by sowing equal quantities in 2 directions, at right angles to each other.
- E. Sow seed at a rate of 7 lbs/1,000 sf (300 lbs/acres).
- F. After seeding, rake or drag surface of soil lightly to incorporate seed into top 1/8" of soil. Roll with light lawn roller.

### 3.4 MULCHING

- A. Place straw mulch on seeded areas within 24 hours after seeding.
- B. Place straw mulch uniformly in a continuous blanket at a rate of 2-1/2 tons per acre or (2) 50 pound bales per 1,000 sq. ft. of area. A mechanical blower may be used for straw mulch application when acceptable to the Architect.
- C. Crimp straw into soil by use of a "crimper". Two passes in opposite direction, required.
- D. Install piping at indicated slope.
- E. Install components having pressure rating equal to or greater required.

### 3.5 HYDROSEEDING (Optional Method)

- A. Use a hydromulcher (sprayer) and apply mixture(s) at the following rate. Mix in accordance with manufacture's recommendations.
- B. Apply hydroseed slurry to indicated areas. Use tackifier

April 6, 2017

only on erosion prone areas. Apply fertilizer with hydro mix.

Seed:	300 pounds per acre
Fertilizer	400 pounds per acre
Tackifier	60 gallons per acre
Wood Cellulose Fiber Mulch	2,000 pounds per acre

- C. Care must be taken not to get hydroseed materials on buildings, walks, roadways, plant beds, etc.

### 3.6 LAWN ESTABLISHMENT

- A. Establish dense lawn of permanent grasses, free from lumps and depressions. Any area failing to show uniform germination to be reseeded; continue until dense lawn established. Damage to seeded area resulting from erosion to be repaired by Contractor. Scattered bare spots over 5 percent not allowed.
- B. In event Contractor does not establish dense lawn during germination period, return to project to refertilize and reseed to establish dense lawn.
- C. Should the seeded lawn become largely weeds after germination, Contractor responsible to kill the weeds and reseed the proposed lawn areas to produce a dense turf, as specified.

### 3.7 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work to the approval of the Landscape Architect. Remove from site all excess materials, debris and equipment. Repair damage resulting from seeding operations. Clean all areas where overspray has occurred from hydroseeding operations.

END OF SECTION 09210



April 6, 2017

SECTION 09220 - TOP SOIL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Attention is directed to Bidding and Contract Requirements, General and Supplemental Requirements, which are hereby made a part of this Section.

1.2 DESCRIPTION OF WORK

- A. Extent of Topsoil Work is shown on drawings and by provisions of this section.
- B. Topsoil for lawn work shall be provided by Contractor from off-site sources free of herbicides.
- C. Related Work Specified Elsewhere:
  - 1. Section 09210: Lawns and Grasses

1.3 QUALITY ASSURANCE

- A. Testing and Inspection: For supplied topsoil. Performed by a qualified independent testing laboratory, under the supervision of a registered professional Engineer, specializing in soils engineering. Obtain samples of stockpiled topsoil before completely stripping from the interior of stockpile.
- B. Provide and pay for testing and inspection during topsoil operations. Laboratory shall be acceptable to the Construction Manager.
- C. Test representative material samples for proposed use.
- D. Topsoil: (Supplied - see Materials 2.01)
  - 1. pH factor
  - 2. Lime requirement
  - 3. Mechanical analysis (P.K. Ca. mg) and cation ratios

April 6, 2017

- 4. Percentage of organic content and loss by ignition
- 5. Soil series classification
- 6. Clay content
- 7. Herbicide residue

E. Recommendations on type and quantity of additives required to establish satisfactory pH factor and supply of nutrients to bring nutrients to satisfactory level for planting.

F. Submit test reports.

#### 1.4 PROJECT CONDITIONS

- A. Known underground and surface utility lines are indicated on the civil drawings.
- B. Protect existing trees, plants, lawns and other features designated to remain as part of the landscaping work.
- C. Promptly repair damage to adjacent facilities caused by topsoil operations. Cost of repair at Contractor's expense.
- D. Promptly notify the Landscape Architect of unexpected sub-surface conditions.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Topsoil: Supplied topsoil proposed for use must meet testing criteria results specified and conform to adjustments as recommended by soil test and Landscape Architect.
- B. Provide topsoil as required to complete the job. Topsoil must meet testing criteria results specified. All processing, cleaning, and preparation of this topsoil to render it acceptable for use is the responsibility of this Contractor.
- C. Supplied topsoil shall be fertile, friable and representative of local productive soil, capable of sustaining vigorous plant growth and screened free of clay lumps, subsoil, noxious weeds or other foreign matter such as stones greater than 1" in diameter in any dimension, roots, sticks, and other

April 6, 2017

extraneous materials: not frozen or muddy. Ph of existing or supplied soil to range between 5.0 and 7.5 Adjusted to not more than 7.0 by additives as required by soil test. Topsoil shall contain not less than 3% and not greater than 10% organic matter. Clay content as determined by Bouyoucous Hydrometer Test shall range between 5 and 15 percent. Mechanical analysis as follows:

<u>PASSING</u>	<u>RETAINED ON</u>	<u>PERCENTAGE</u>
1" Screen		100%
1" Screen	1/4" screen (gravel)	Not more than 3%
1/4" Screen	No. 140 USS Mesh Sieve	40-60%
No. 140 USS	Percentage based on dry weight of the samples	30-35% (Very fine sand, silt, and clay)

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine rough grades and installation conditions. Do not start topsoil work until unsatisfactory conditions are corrected.

#### 3.2 FINISH GRADING

- A. Perform top soiling within contract limits, including adjacent transition areas, to new elevations, levels, profiles, and contours indicated. Provide uniform levels and slopes between new elevations and existing grades.
- B. Grade surfaces to assure areas drain away from building structures and to prevent ponding and pockets of surface drainage.
- C. Lawn Areas: Supply and spread topsoil to a minimum uniform depth of 4" or as noted. Incorporate into existing subsoil by disc, roto till or other approved method to a minimum 6" depth. No layering of soils is to exist after tilling. Remove clumps larger than 1" in diameter.
- D. Grade lawn areas to a smooth, free draining even surface with a loose, moderately coarse texture ready to accept seed or sod.

April 6, 2017

- E. For trees, shrubs, ground cover beds and backfill for beds, see Trees, Shrubs and Ground Cover Section.
- F. Provide earth crowning where indicated on drawings.
- G. Crowning/mounding to be free flowing in shape and design, as indicated and to blend into existing grades gradually so that toe of slope is not readily visible. Landscape Architect to verify final contouring before planting.
- H. Regrading of finish grading elevations indicated, it is intended that grading be such that proper drainage of surface water will occur and that no low areas are created to allow ponding. Contractor to consult with Owner or Landscape Architect regarding minor variations in grade elevations before rough grading is completed.

### 3.3 CLEANING

- A. Upon completion of top soiling operations, clean areas within contract limits, remove tools and equipment. Site shall be clear, clean, free of debris and suitable for site work operations.

END OF SECTION 09220

April 6, 2017

SECTION 09250 - GYPSUM DRYWALL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 SUMMARY:

- A. Extent of each type of gypsum drywall construction required is indicated on Drawings.
- B. This Section includes the following types of gypsum board construction:
  - 1. Steel framing members to receive gypsum board.
  - 2. Gypsum board screw-attached to steel framing and furring members.

1.3 DEFINITIONS:

- A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA 505 for definitions of terms for gypsum board construction not otherwise defined in this section or other referenced standards.

1.4 SUBMITTALS:

- A. Product data from manufacturers for each type of product specified.

1.5 QUALITY ASSURANCE:

- A. Fire-Resistance Ratings: Where indicated, provide materials and construction which are identical to those of assemblies whose fire resistance rating has been determined per ASTM E 119 by a testing and inspecting organization acceptable to authorities having jurisdiction.
  - 1. Provide fire-resistance-rated assemblies identical to those indicated by reference to GA File No's. in GA-600 "Fire Resistance Design Manual" or to design designations in U.L. "Fire Resistance Directory" or in listing of other testing and agencies acceptable to authorities having jurisdiction.

April 6, 2017

- B. Single Source Responsibility: Obtain each type of gypsum board and related joint treatment materials from a single manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.
- C. Handle gypsum boards to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

1.7 PROJECT CONDITIONS:

- A. Environmental Conditions, General: Establish and maintain environmental conditions for application and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.
- B. Minimum Room Temperatures: For nonadhesive attachment of gypsum board to framing, maintain not less than 40 deg F (4 deg C). For adhesive attachment and finishing of gypsum board maintain not less than 50 deg F (10 deg C) for 48 hours prior to application and continuously thereafter until drying is complete.
- C. Ventilate building spaces to remove water not required for drying joint treatment materials. Avoid drafts during dry, hot weather to prevent materials from drying too rapidly.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
  - 1. Steel Framing and Furring:
    - a. Clark Steel Framing
    - b. Dietrich Industries, Inc.
    - c. Marino/Ware, Division of Ware Industries
    - d. Dale/Incor (Dale Industries)

April 6, 2017

e. Or approved equal

2. Gypsum Boards and Related Products:

- a. Georgia-Pacific Gypsum Corp.
- b. Gold Bond Building Products Div., National Gypsum Co.
- c. United States Gypsum Co.
- d. Or approved equal

2.2 STEEL FRAMING COMPONENTS FOR SUSPENDED AND FURRED CEILINGS:

- A. General: Provide components which comply with ASTM C 754 for materials and sizes, unless otherwise indicated.
- B. Concrete Inserts: Inserts designed for attachment to concrete forms and for embedment in concrete, fabricated from corrosion-resistant materials, with holes or loops for attachment of hanger wires and capability to sustain, without failure, a load equal to 3 times that imposed by ceiling construction, as determined from testing per ASTM E 488, conducted by an independent testing laboratory.
- C. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.
- D. Channels: Cold-rolled steel, 0.0598 inch minimum thickness of base (uncoated) metal and 7/16 inch wide flanges, protected with rust-inhibitive paint, and as follows:
  - 1. Carrying Channels: 1-1/2 inch deep, 475 lbs per 1000 ft., unless otherwise indicated.
  - 2. Furring Channels: 3/4 inch deep, 300 lbs per 1000 ft., unless otherwise indicated.
- E. Steel Studs for Furring Channels: ASTM C 645, with flange edges bent back 90 deg and doubled over to form 3/16 inch minimum lip (return), minimum thickness of base (uncoated) metal and minimum depth as follows:
  - 1. Thickness: 0.0329 inch, unless otherwise indicated.
  - 2. Depth: 3-5/8 inches, unless otherwise indicated.
- F. Steel Rigid Furring Channels: ASTM C 645, hat-shaped, depth of 7/8 inch, and minimum thickness of base (uncoated) metal as follows:
  - 1. Thickness: 0.0329 inch, unless otherwise indicated.
- G. Steel Resilient Furring Channels: Manufacturer's standard product designed to reduce sound transmission, complying with ASTM C 645 for material, finish and widths of face

April 6, 2017

and fastening flange, fabricated to form 1/2 inch deep channel of the following configuration:

1. Single-Leg Configuration: Assymetric-shaped channel with face connected to a single flange by a single slotted leg (web).

- H. Grid Suspension System: ASTM C 645, manufacturer's standard grid suspension system composed of main beams and cross furring members which interlock to form a modular supporting network.

### 2.3 STEEL FRAMING FOR WALLS AND PARTITIONS:

- A. Steel Studs and Runners: ASTM C 645, with flange edges of studs bent back 90 deg and doubled over to form 3/16" minimum lip (return) and complying with the following requirements for minimum thickness of base (uncoated) metal and for depth:

1. Thickness: 0.0329 inch where indicated.
2. Depth: 3-5/8 inches, unless otherwise indicated.

- B. Steel Rigid Furring Channels: ASTM C 645, hat-shaped, depth and minimum thickness of base (uncoated) metal as follows:

1. Thickness: 0.0329 inch, unless otherwise indicated.
2. Depth: 7/8 inch.

- C. Furring Brackets: Serrated-arm type, adjustable, fabricated from corrosion-resistant steel sheet complying with ASTM C 645, minimum thickness of base (uncoated) metal of 0.0329 inch, designed for screw attachment to steel studs and steel rigid furring channels used for furring.

- D. Steel Resilient Furring Channels: Manufacturer's standard product designed to reduce sound transmission, complying with ASTM C 645 for base metal, finish and widths of face and fastening flange, fabricated to form 1/2 inch deep channel of the following configuration:

1. Single-Leg Configuration: Assymetric-shaped channel with face connected to a single flange by a single slotted leg (web).

- E. Fasteners: Provide fasteners of type, material, size, corrosion resistance, holding power and other properties required to fasten steel framing and furring members securely to substrates involved; complying with the



April 6, 2017

recommendations of gypsum drywall manufacturers for applications indicated.

2.4 GYPSUM BOARD:

- A. General: Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end joints.
  - 1. Thickness: Provide gypsum board in thicknesses indicated, or if not otherwise indicated, in either 1/2 inch or 5/8 inch thicknesses to comply with ASTM C 840 for application system and support spacing indicated.
- B. Gypsum Wallboard: ASTM C1396, and as follows:
  - 1. Type: Regular, unless otherwise indicated.
  - 2. Type: Foil-backed where indicated.
  - 3. Type: Type X for fire-resistance-rated assemblies.
  - 4. Edges: Tapered.
  - 5. Thickness: 5/8 inch, unless otherwise indicated.
  - 6. Thickness: 1/2 inch where indicated.
  - 7. Products: Subject to compliance with requirements, provide one of the following products where Type X gypsum wallboard is indicated:
    - a. "Gyprock Fireguard 'C' Gypsum Board"; (Georgia Pacific Gypsum (formerly Domtar Gypsum Co.))
    - b. "Fire-Shield G"; Gold Bond Building Products Div., National Gypsum Co.
    - c. "SHEETROCK Brand FIRECODE 'C' Gypsum Panels"; United States Gypsum Co.
    - d. Or approved equal
- C. Gypsum Backing Board for Multi-Layer Applications: ASTM C1396 or, where backing board is not available from manufacturer, gypsum wallboard, ASTM C1396, and as follows:
  - 1. Type: Regular, unless otherwise indicated.
  - 2. Type: Foil-backed where indicated.
  - 3. Type: Type X for fire-resistance-rated assemblies.

April 6, 2017

4. Edges: Manufacturer's standard.
  5. Thickness: 5/8 inch, unless otherwise indicated.
  6. Thickness: 1/2 inch where indicated.
- D. Water-Resistant Gypsum Backing Board: ASTM C1396, and as follows:
1. Type: Regular, unless otherwise indicated.
  2. Type: Type X for fire-resistance-rated assemblies.
  3. Thickness: 5/8 inch, unless otherwise indicated.
- E. Exterior Gypsum Ceiling/Soffit Board: ASTM C1396, with manufacturer's standard edges, of type and thickness indicated below:
1. Type: Regular, unless otherwise indicated.
  2. Type: Type X for fire-resistance rated assemblies.
  3. Thickness: 5/8 inch, unless otherwise indicated.
- F. Vandal Resistant Gypsum Board: ASTM C1629 (Noted as high-impact gypsum board on wall types) Provide assembly consisting of 5/8" Hi-Impact brand XP gypsum wallboard as manufactured by National Gypsum with tapered edges with reinforced taped joints (profoam joint tape) and concealed with profoam ready mix or setting compounds and epoxy paint on finished surface, or equal as determined by Architect.

## 2.5 TRIM ACCESSORIES:

- A. Cornerbead and Edge Trim for Interior Installation: Provide corner beads, edge trim and control joints which comply with ASTM C 1047 and requirements indicated below:
1. Material: Formed metal, plastic or metal combined with paper, with metal complying with the following requirement:
    - a. Sheet steel zinc-coated by hot-dip process.
  2. Edge trim shapes indicated below by reference to designations of Fig. 1 in ASTM C 1047:
    - a. "LC" Bead, unless otherwise indicated.
    - b. "L" Bead where indicated.
    - c. "U" Bead where indicated.

April 6, 2017

3. One-Piece Control Joint: Formed with vee-shaped slot per Fig. 1 in ASTM C 1047, with slot opening covered with removable strip.

- B. Metal Cornerbead and Edge Trim for Exterior Ceilings: Comply with the following requirements:

1. Edge trim complying with ASTM C 1047, formed from rolled zinc, shape "LC" Bead per Fig. 1, unless otherwise indicated.

#### 2.6 GYPSUM BOARD JOINT TREATMENT MATERIALS:

- A. General: Provide materials complying with ASTM C 475, ASTM C 840, and recommendations of manufacturer of both gypsum board and joint treatment materials for the application indicated.

- B. Joint Tape: Paper reinforcing tape, unless otherwise indicated.

1. Use pressure sensitive or staple-attached open-weave glass fiber reinforcing tape with compatible joint compound where recommended by manufacturer of gypsum board and joint treatment materials for application indicated.

- C. Setting-Type Joint Compounds: Factory-prepackaged, job-mixed, chemical-hardening powder products formulated for uses indicated.

1. Where setting-type joint compounds are indicated for use as taping and topping compounds, use formulation for each which develops greatest bond strength and crack resistance and is compatible with other joint compounds applied over it.

2. For prefilling gypsum board joints, use formulation recommended by gypsum board manufacturer for this purpose.

3. For filling joints and treating fasteners of water-resistant gypsum backing board behind base for ceramic tile, use formulation recommended by gypsum board manufacturer for this purpose.

- D. Drying-Type Joint Compounds: Factory-prepackaged vinyl-based products complying with the following requirements for formulation and intended use.

1. Ready-Mix Formulation: Factory-premixed product.

April 6, 2017

2. All-purpose compound formulated for use as both taping and topping compound.

#### 2.7 MISCELLANEOUS MATERIALS:

- A. General: Provide auxiliary materials for gypsum drywall construction which comply with referenced standards and the recommendations of the manufacturer of the gypsum board.
- B. Laminating Adhesive: Special adhesive or joint compound recommended for laminating gypsum boards.
- C. Spot Grout: ASTM C 475, setting-type joint compound of type recommended for spot grouting hollow metal door frames.
- D. Fastening Adhesive for Wood: ASTM C 557.
- E. Fastening Adhesive for Metal: Special adhesive recommended for laminating gypsum boards to steel framing.
- F. Gypsum Board Screws: ASTM C 1002.
- G. Gypsum Board Nails: ASTM C 514.
- H. Concealed Acoustical Sealant: Nondrying, nonhardening, nonskinning, nonstaining, nonbleeding, gunnable sealant complying with requirement specified in Division-7 section "Joint Sealers."
- I. Sound Attenuation Blankets: Unfaced mineral fiber blanket insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing); and as follows:
  1. Mineral Fiber Type: Fibers manufactured from glass.
  2. Use in all partitions.(whether or not indicated on drawings)

#### PART 3 - EXECUTION

##### 3.1 EXAMINATION:

- A. Examine substrates to which drywall construction attaches or abuts, preset hollow metal frames, cast-in-anchors, and structural framing, with Installer present, for compliance with requirements for installation tolerances and other

April 6, 2017

conditions affecting performance of drywall construction.  
Do not proceed with installation until unsatisfactory  
conditions have been corrected.

### 3.2 PREPARATION:

- A. Ceiling Anchorages: Coordinate installation of ceiling suspension system with installation of overhead structural systems to ensure that inserts and other structural anchorage provisions have been installed to receive ceiling anchors in a manner that will develop their full strength and at spacing required to support ceiling.

### 3.3 INSTALLATION OF STEEL FRAMING, GENERAL:

- A. Steel Framing Installation Standard: Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation.
- B. Install supplementary framing, blocking and bracing at terminations in the work and for support of fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, and similar construction to comply with details indicated and with recommendations of gypsum board manufacturer, or if none available, with "Gypsum Construction Handbook" published by United States Gypsum Co.
- C. Isolate steel framing from building structure to prevent transfer of loading imposed by structural movement, at locations indicated below to comply with details shown on Drawings:
  - 1. Where edges of suspended ceilings abut building structure horizontally at ceiling perimeters or penetration of structural elements.
  - 2. Where partition and wall framing abuts overhead structure.
    - a. Provide slip or cushioned type joints as detailed to attain lateral support and avoid axial loading.
- D. Do not bridge building expansion and control joints with steel framing or furring members; independently frame both sides of joints with framing or furring members or as indicated.

### 3.4 INSTALLATION OF STEEL FRAMING FOR SUSPENDED AND FURRED CEILINGS:

- A. Secure hangers to structural support by connecting

April 6, 2017

directly to structure where possible, otherwise connect to cast-in concrete inserts or other anchorage devices or fasteners as indicated.

1. Do not attach hangers to metal deck tabs.
  2. Do not attach hangers to metal roof deck.
- B. Do not connect or suspend steel framing from ducts, pipes or conduit.
- C. Keep hangers and braces 2 inches clear of ducts, pipes and conduits.
- D. Sway-brace suspended steel framing with hangers used for support.
- E. Install suspended steel framing components in sizes and at spacings indicated but not less than that required by referenced steel framing installation standard.
1. Wire Hangers: 0.1620 inch diameter (8 gage), 4 ft. on center.
  2. Carrying Channels (Main Runners): 1-1/2 inch, 4 ft. on center.
  3. Rigid Furring Channels (Furring Members): 16 inches on center.
  4. Rigid Furring Channels (Furring Members): 24 inches on center.
- F. Installation Tolerances: Install steel framing components for suspended ceilings so that cross furring members or grid suspension members are level to within 1/8 inch in 12 ft. as measured both lengthwise on each member and transversely between parallel members.
- G. Wire-tie or clip furring members to main runners and to other structural supports as indicated.
- H. For exterior soffits/ceilings provide cross-bracing and additional framing indicated or required to resist wind uplift.

### 3.5 INSTALLATION OF STEEL FRAMING FOR WALLS AND PARTITIONS:

- A. Install runners (tracks) at floors, ceilings and structural walls and columns where gypsum drywall stud system abuts other construction.

April 6, 2017

1. Where studs are installed directly against exterior walls, install asphalt felt strips between studs and wall.
- B. Installation Tolerances: Install each steel framing and furring member so that fastening surface do not vary more than 1/8 inch from plane of faces of adjacent framing.
- C. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
- D. Terminate partition framing at suspended ceilings where indicated.
- E. Install steel studs and furring in sizes and at spacings indicated but not less than that required by referenced steel framing installation standard.
  1. For single layer construction: 16 inches on center.
- F. Install steel studs so that flanges point in the same direction and gypsum boards can be installed in the direction opposite to that of the flange.
- G. Frame door openings to comply with details indicated, with GA-219 and with applicable published recommendations of gypsum board manufacturer. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
  1. Extend vertical jamb studs through suspended ceilings and attach to underside of floor or roof structure above.
- H. Frame openings other than door openings to comply with details indicated, or if none indicated, in same manner as required for door openings; and install framing below sills of openings to match framing required above door heads.

3.6APPLICATION AND FINISHING OF GYPSUM BOARD, GENERAL:

- A. Gypsum Board Application and Finishing Standard: Install and finish gypsum board to comply with ASTM C 840.
- B. Install sound attenuation blankets in all partitions

April 6, 2017

(whether indicated or not) and other locations where indicated, prior to gypsum board unless readily installed after board has been installed.

- C. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 24 inches in alternate courses of board.
- D. Install ceiling boards across framing in the manner which minimizes the number of end-butt joints, and which avoids end joints in the central area of each ceiling. Stagger end joints at least 24 inches.
- E. Install wall/partition boards in manner which minimizes the number of end-butt joints or avoids them entirely where possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.
- F. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16 inch open space between boards. Do not force into place.
- G. Locate either edge or end joints over supports, except in horizontal applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.
- H. Attach gypsum board to steel studs so that leading edge or end of each board is attached to open (unsupported) edge of stud flange first.
- I. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.
- J. Spot grout hollow metal door frames for solid core wood doors, hollow metal doors and doors over 32 inches wide. Apply spot grout at each jamb anchor clip just before inserting board into frame.
- K. Form control joints and expansion joints at locations indicated, with space between edges of boards, prepared to receive trim accessories.
- L. Cover both faces of steel stud partition framing with



April 6, 2017

gypsum board in concealed spaces (above ceilings, etc.), except in chase walls which are braced internally.

1. Except where concealed application is indicated or required for sound, fire, air or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. area, and may be limited to not less than 75 percent of full coverage.
  2. Fit gypsum board around ducts, pipes, and conduits.
- M. Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4 inch to 1/2 inch space and trim edge with "U" bead edge trim. Seal joints with acoustical sealant.
- N. At all drywall partitions, seal construction at perimeters, control and expansion joints, openings and penetrations with a continuous bead of acoustical sealant including a bead at both faces of partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim, and close off sound-flanking paths around or through construction, including sealing of partitions above acoustical ceilings.
- O. Space fasteners in gypsum boards in accordance with referenced gypsum board application and finishing standard and manufacturer's recommendations.

### 3.7METHODS OF GYPSUM BOARD APPLICATION:

- A. Single-Layer Application: Install gypsum wallboard as follows:
1. On ceilings apply gypsum board prior to wall/partition board application to the greatest extent possible.
  2. On partitions/walls apply gypsum board vertically (parallel to framing), unless otherwise indicated, and provide sheet lengths which will minimize end joints.
  3. On partitions/walls 8'-1" or less in height apply gypsum board horizontally (perpendicular to framing); use maximum length sheets possible to minimize end joints.
- B. Wall Tile Base: Where drywall is base for thin-set ceramic tile and similar rigid applied wall finishes, install gypsum backing board.
1. In "dry" areas install gypsum backing board or

April 6, 2017

wallboard with tapered edges taped and finished to produce a flat surface.

2. At showers, tubs and similar "wet" areas, install water-resistant gypsum backing board to comply with ASTM C 840 and recommendations of gypsum board manufacturer.
- C. Double-Layer Application: Install gypsum backing board for base layer and gypsum wallboard for face layer.
1. On ceilings apply base layer prior to application of base layer on walls/partitions; apply face layers in same sequence. Offset joints between layers at least 10 inches. Apply base layers at right angles to supports unless otherwise indicated.
  2. On partitions/walls apply base layer and face layers vertically (parallel to framing) with joints of base layer over supports and face layer joints offset at least 10 inches with base layer joints.
- D. Acoustical Tile Base: Where drywall is base for adhesively applied acoustical tile, install gypsum backing board.
1. Provide either V-joint type backing board or tape and finish joints to produce a flat surface.
- E. Single-Layer Fastening Methods: Apply gypsum boards to supports as follows:
1. Fasten with screws.
- F. Double-Layer Fastening Methods: Apply base layer of gypsum board and face layer to base layer as follows:
1. Fasten both base layers and face layers separately to supports with screws.
- G. Direct-Bonding to Substrate: Where gypsum board is indicated to be directly adhered to a substrate (other than studs, joists, furring members or base layer of gypsum board), comply with gypsum board manufacturer's recommendations, and temporarily brace or fasten gypsum board until fastening adhesive has set.
- H. Exterior Soffits and Ceilings: Apply exterior gypsum soffit board perpendicular to supports, with end joints staggered over supports. Install with 1/4 inch open space where boards abut other construction.

April 6, 2017

1. Fasten with cadmium-plated screws, or with galvanized or aluminum nails where supports are available.

### 3.8 INSTALLATION OF DRYWALL TRIM ACCESSORIES:

- A. General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges to comply with manufacturer's recommendations.
- B. Install corner beads at external corners.
- C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, and except where plastic trim is indicated. Provide type with face flange to receive joint compound except where "U" bead (semi-finishing type) is indicated.
  1. Install "LC" bead where drywall construction is tightly abutted to other construction and back flange can be attached to framing or supporting substrate.
  2. Install "L" bead where edge trim can only be installed after gypsum board is installed.
  3. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).
- D. Install plastic edge trim where indicated on wall panels at juncture with ceilings.
- E. Install control joints at locations indicated, or if not indicated, at spacings and locations required by referenced gypsum board application and finish standard, and approved by the Architect for visual effect.

### 3.9 FINISHING OF DRYWALL:

- A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects and elsewhere as required to prepare work for decoration.
- B. Prefill open joints and rounded or beveled edges, if any, using setting-type joint compound.
- C. Apply joint tape at joints between gypsum boards, except where trim accessories are indicated.
- D. Finish interior gypsum wallboard by applying the following joint compounds in 3 coats (not including prefill of

April 6, 2017

openings in base), and sand between coats and after last coat:

1. Embedding and First Coat: Setting-Type Joint Compound.
2. Fill (Second) Coat: Setting-type joint compound.
3. Finish (Third) Coat: Ready-mix drying-type all-purpose or topping compound.

E. Finish exterior gypsum ceiling/soffit board by using setting-type joint compounds to prefill joints, embed tape, and to apply first, fill (second) and finish (third) coats; smooth each coat before joint compound hardens to minimize need for sanding; sand between coats and after finish coat.

1. Painting of exterior gypsum ceiling/soffit board after finish coat has dried is specified in Division-9 Section "Painting."

F. Base for Acoustical Tile: Where gypsum board is indicated as a base for adhesively-applied acoustical tile, install tape and 2- coat compound treatment, without sanding.

G. Water-Resistant Backing Board Base for Ceramic Tile: Finish joints between water-resistant backing board with tape and setting-type joint compound to comply with gypsum board manufacturer's recommendations and installation standards referenced in Division-9 Section "Tile."

H. Partial Finishing: Omit third coat and sanding on concealed drywall construction which is indicated for drywall finishing or which requires finishing to achieve fire-resistance rating, sound rating or to act as air or smoke barrier.

### 3.10 PROTECTION:

A. Provide final protection and maintain conditions, in a manner suitable to Installer, which ensures gypsum drywall construction being without damage or deterioration at time of Substantial Completion.

END OF SECTION 09250

April 6, 2017

SECTION 09300 - TILE WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

- A. The extent of tile work is shown on drawings and in schedules.

1.03 QUALITY ASSURANCE:

- A. Qualifications of Installers:
  - 1. For installation of ceramic tile, use only thoroughly trained and experienced personnel completely familiar with specified products, manufacturer's recommended methods of installation and requirements established for this work.
- B. Codes and Standards:
  - 1. Comply with recommendations of "Handbook for Ceramic Tile Installation" published by Tile Council of America.
  - 2. Comply with ANSI and ASTM Standards listed within this Section.
- C. Proprietary Materials: Handle, store, mix and apply proprietary setting and grouting materials in compliance with manufacturer's instructions.

1.04 SUBMITTALS:

- A. Product Data:
  - 1. For information only, submit two (2) copies of manufacturer's technical information and install instructions for all materials required, except bulk materials. Include certifications and other data as may be required to show compliance with these specifications. Transmit a copy of each instruction to the Installer.

April 6, 2017

2. Accompany materials list with two (2) copies of manufacturer's current recommended method of installation for each item. These recommendations, after review by Contractor and Architect/Engineer, shall form basis for acceptance or rejection of installed work.

B. Samples:

1. Submit three (3) samples of each type and color of new tile required, not less than 12" square on plywood or hardboard backing and grouted. Submit samples of trim and 6" long sample of marble threshold. Review will be for color, pattern and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor.

1.05 DELIVERY AND STORAGE:

- A. Deliver packaged materials and store in original containers with seals unbroken and labels in tact until time of use, in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Hard Tile (HT-1)

1. Shall meet requirements of TCA 137.1 and requirements of this Section.
2. Porcelain ceramic tile for Warming Area floors and walls shall be:
  - a. Floor: Astor Ceramiche - Fusion, Color - Ochres, Sizes - 24"x48", 24"x24" and 12"x24" random pattern, Distributed by Virginia Tile, or approved equal.
  - b. Walls: Astor Ceramiche - Fusion, Color - Ochres, Sizes - 24"x48", 24"x24" and 12"x24" random pattern, Distributed by Virginia Tile, or approved equal.
  - c. Provide with 2" cove base by Crossville, color to match and all other trim pieces for a complete project. Or approved equal.

April 6, 2017

B. Porcelain Ceramic Tile (HT-1)

1. Shall meet requirements of TCA 137.1 and requirements of this Section.
2. Porcelain ceramic tile for Men's Restroom/Changing Room, Women's Restroom/Changing Room, and Family Restroom floors and walls shall be:
  - a. Floor: Astor Ceramiche - Fusion, Color - Ochres, Sizes - 24"x48", 24"x24" and 12"x24" random pattern, Distributed by Virginia Tile, or approved equal.
  - b. Walls: Astor Ceramiche - Fusion, Color - Ochres, Sizes - 6"x30", Distributed by Virginia Tile, or approved equal.
  - c. Provide with 2" cove base by Crossville, color to match and all other trim pieces for a complete project. Or approved equal.

C. Quarry Tile (QT-1)

1. Shall meet requirements of TCA 137.1 and requirements of this Section.
2. Quarry tile for Kitchen area shall be:
  - a. Field tile: 8"x8" Quarry Tile by American Olean, Color - Canyon Red, or approved equal.
  - b. Provide with all required trim pieces and cove base for a complete project.

- D. Marble Thresholds: Marble thresholds shall be 1/2" inch high with chamfered edges of a uniform, fine to medium grained white stone with gray veining and conform to ASTM C503 with a minimum abrasion resistance of ten (10) per ASTM C1353 or ASTM C241 and with a honed finish.

2.02 SETTING MATERIALS

- A. Portland Cement Mortar Installation Materials: Provide materials complying with ANSI A108.1A and as specified below:

1. Cleavage Membrane: Asphalt felt, ASTM D226, Type 1 (No. 15), or polyethylene sheeting ASTM D4397, 4.0 mils thick.
2. Reinforcing Wire Fabric: Galvanized, welded wire

HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW PROJECT #0215-0038

April 6, 2017

fabric, 2 by 2 inches by 0.062 inch diameter with ASTM A185 and ASTM A82, except for minimum wire size.

B. Latex-Portland Cement Mortar: ANSI A118.4, composed as follows:

1. Mixture of Dry-Mortar Mix and Latex Additive: Mixture the prepackaged dry-mortar mix and liquid-latex additive complying with the following requirements:
  - a. Latex Additive: Acrylic resin.
2. Provide one of the following products:
  - a. ProSpec (formerly Bonsal Branded Products), Charlotte, NC; "Floor Thin Set Mortar/B-730 Acrylic Additive.
  - b. Bostik, Middletown, MA: Tile-mate 710/713/Hydroment 425
  - c. C-Cure, Houston, TX; Perma Bond 902/ANSI A118.4, Section F.2.1.2.
  - d. Laticrete, Bethany, CT; Laticrete 317/Laticrete 3701 Grout and Mortar mix.
  - e. Mapei, Elk Grove Village, IL; Keraset/Keraply
  - f. TEC, Palatine, IL; Thin Set Mortar 335/36/Full Bond
  - g. Or approved equal.

C. Waterproofing and Crack Isolation Membrane: Provide materials complying with ANSI A118.10 and as specified below: (Note: All porcelain tile to be installed on crack isolation membrane).

1. Hydraflex as manufactured by TEC. Ready to use, flexible, mold and mildew resistant waterproofing and crack isolation membrane for interior and exterior applications. (Note: All porcelain tile to be installed on crack isolation membrane). (or approved equal)
2. Custom building products RedGard waterproofing and crack prevention membrane (or approved equal).
3. Hydroment ultra-set advanced as manufactured by Bostik, Inc. (or approved equal).
4. B-6000 waterproof crack isolation membrane as manufactured by ProSpec (formerly Bonsal Branded Products) (or approved equal).
5. Hydro-Ban waterproofing/anti-fracture membrane as



April 6, 2017

manufactured by Laticrete International, Inc.,  
Bethany, CT (or approved equal).

6. Mapelastic aqua defense as manufactured by MAPEI Corp.  
(or approved equal)

## 2.03 GROUTING MATERIALS

- A. Epoxy-modified Grout Admixture: Complying with ANSI A118.8 and A118.3.

1. Provide one of the following manufacturers:

- a. ProSpec (formerly Bonsal Branded Products),  
Charlotte, NC; B-700 epoxy mortar and grout.
- b. Bostik, Middletown, MA; Hydroment 1900 epoxy-  
modified grout and mortar admixture.
- c. C-cure - Houston TX; epox set 933
- d. TEC Accucolor EFX epoxy special effects
- e. Laticrete, Bethany, CT, Spectralock Pro Grout.
- f. Or approved equal

- B. Color: As selected by Architect.

## 2.04 MISCELLANEOUS MATERIAL

- A. Latex Underlayment: Quick set type, as recommended by  
membrane manufacturer, as required to provide positive  
drainage to floor drains.
- B. Sealants for control joints in floors and walls, use one  
part fungicidal silicone rubber to match grout, Dow  
Corning 784, or Laticrete Latasil silicone sealant meeting  
Fed. Spec. TT-S-001543, Class A or B. (or approved equal)

## PART 3 - EXECUTION

### 3.01 INSPECTION:

- A. Installer must examine the areas and conditions under  
which tile work is to be installed and notify the General  
Contractor, in writing, of conditions detrimental to the  
proper and timely completion of the work. Do not proceed  
with the work until unsatisfactory conditions have been  
corrected in a manner acceptable to the Installer.

### 3.02 PREPARATION:

- A. Prepare substrate to receive setting bed and tile  
recommended both by the manufacturer of the tile and of  
the setting bed materials.

April 6, 2017

1. Fill cracks, holes and depressions with trowelable leveling and patching compound according to tile setting material manufacturer's written instructions.
2. Remove protrusions, bumps and ridges by sanding or grinding.
3. Provide concrete substrates for tile floors that comply with flatness tolerances specified in ANSI A108.

B. Clean substrate as required and recommended to achieve bond using cleaners, detergents, etc.

C. Neutralize and seal substrates as recommended.

### 3.03 INSTALLATION:

#### A. Tile Installation - General:

1. Provide installation of ceramic tile in accordance with Tile Council of America's "Handbook for Ceramic Tile Installation."
2. Fit tile carefully against trim and around pipes, electrical boxes and other built-up fixtures so that escutcheons, plates and collars will completely overlap cut edges.
3. Smooth exposed edges and clean tile before installation.
4. Install porcelain ceramic tile with a 1/8" joint.
5. Joint designs shall be symmetrical within room or area; border tile be not less than 1/2 normal width. Floor tile shall be set in straight line design, with wall joints in alignment with floor tile where possible.
6. At junction of base tile and wall tile, at projections through tile and at junctions of tile to shower receptors, urinals, corner guards and similar equipment, leave joint ungrouted for sealing.
7. When using tile sheets, minimize tearing sheets apart.

### 3.04 SETTING METHODS

A. Method and typical detailing for tile work shall be in

April 6, 2017

accordance with the following TCA alphanumeric method, listing from the "Handbook for Ceramic Tile Installation", latest edition, by the Tile Council of America.

B. Concrete Subfloors

1. Slabs on grade (thin-set method): TCA setting method F115-09 (provide with waterproof and crack isolation membrane) thin set Portland Cement mortar, epoxy grout complying with tile installation specification ANSI A108.5 and epoxy grout installation specification ANSI A108.6.

C. Walls

1. Masonry (Cement Mortar Bond Method): TCA Setting Method W202-09 latex-Portland Cement mortar, install per Tile Installation Specification ANSI A108.5. Install crack isolation membrane per manufacturer's specs.

3.05 GROUTING

- A. Grouting shall be installed in accordance with ANSI A108.10 and the manufacturer's recommended procedures and precautions during application and cleaning.
- B. Rinse tilework thoroughly with clean water before and after using chemical cleaners.
- C. Base Installation:
  1. Over concrete and masonry, install base using dry-set portland cement mortar in accord with ANSI A108.5. Grout using same grout specified for related tile floor.
- D. Jointing Pattern: Lay tile in pattern indicated. Layout tile work and enter tile fields both directions in such space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint width, unless otherwise shown.
- E. Expansion and Control Joints: Provide as indicated on drawings and as recommended by TCA and by tile and setting bed and grouting material manufacturer and as follows:
  1. Control Joints Locations: Comply with the Tile Council of America. (TCA) and where indicated.

April 6, 2017

a. Interior Locations (horizontal and vertical):

1. Over any expansion joint, control joint, cold joint or seismic joint in the building structure.
2. Expansion joints - 24 feet to 36 feet in each direction.
3. Expansion joints - 8 feet to 12 feet where tile work located in direct sunlight or moisture locations.
4. Where tile abuts restraining surfaces such as perimeter walls, dissimilar floors, curbs, columns, pipes, ceiling and where changes occur in backing materials.
5. Coordinate joint locations with the Architect and for other areas indicated or required.
6. Joint width shall be 3/8 inch, unless otherwise indicated.
7. Provide under-layment systems.
8. Install compatible sealant and color approved by the Architect.

F. Grout all tile using commercial epoxy grout as specified.

1. Temporarily protect tile as required to prevent staining.

3.04 ADJUST AND CLEAN:

A. Cleaning:

1. Clean grout and setting materials from face of tile while materials are workable. Leave tile face clean and free of all foreign matter.
2. Tile may be cleaned with acid solutions only when permitted by the tile and grout manufacturer's printed instructions, but not sooner than 14 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush the surface with clean water before and after cleaning.

B. Finished Tile Work:

1. Leave finished installation clean and free of cracked, chipped, broken, unbonded, or otherwise defective tile work.

C. Protection:

1. Apply a protective coat of neutral protective cleaner

HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW PROJECT #0215-0038

April 6, 2017

to completed tile work.

2. Protect installed tile work with Kraft paper or other heavy covering during the construction period to prevent damage and wear.
3. Prohibit all foot and wheel traffic from using tiled floors for at least 3 days, preferably 7 days.
4. Before final inspection, remove protective coverings and rinse neutral cleaner from all tile surfaces.

END OF SECTION 09300



April 6, 2017

SECTION 09510 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

- A. The extent of acoustical panel ceiling is shown on the drawings and in schedules.

1.03 QUALITY ASSURANCE:

- A. The installation of acoustical panel ceilings is to be by an experienced installation firm which is acceptable to the manufacturer of the acoustical units, as shown by current written statement from the manufacturer.
- B. Standard for Terminology and Performance: Applicable publications by the Acoustical and Insulating Materials Association (AIMA), including "Performance Data, Architectural Acoustical Materials."
- C. Fire Hazard Classification: UL tested, listed and labeled as Class 0.25.

1.04 SUBMITTALS:

- A. Product Data:
  - 1. For information only, submit 2 copies of manufacturer's product specifications and installation instructions for each acoustical panel ceiling material required, and for suspension system, including certified laboratory test reports and other data as required to show compliance with these specifications. Distribute one additional copy of each installation instruction to the Installer.
    - a. Include manufacturer's recommendations for cleaning and refinishing acoustical panel, including precautions against materials and methods which may be detrimental to finishes and acoustical performance.

April 6, 2017

1.05 SAMPLES

1. Submit 3 sets of 12" square Samples for each acoustical panel required. In each set of samples show the full range of exposed color and texture to be expected in the completed work. Sample submittal and Architect's review will be for color and texture only. Compliance with other requirements is the exclusive responsibility of the Installer.
2. Submit 3, 12" long samples of exposed runner and molding. Architect's review will be for color and texture only. Compliance with other requirements is the exclusive responsibility of the Installer.

C. Maintenance Stock:

1. At the time of completing the installation, deliver stock of maintenance materials to the Owner. Furnish full size units matching the units installed, packaged with protective covering for storage and identified with appropriate labels. Furnish an amount equal to 5.0% of the amount installed.

1.06 JOB CONDITIONS:

- A. Space Enclosures: Do not install until interior acoustical panel ceilings unit space has been enclosed and is weather-tight, and until wet work in the space has been completed and is nominally dry and until work above ceilings has been completed, and until ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

PART 2 - PRODUCTS

2.01 CEILING UNITS: (Note: Only one manufacturer of ceiling tile shall be used throughout the project).

A. Acoustical Panels: (AT-1) Kitchen

1. Provide 24" x 48" Armstrong, Cermaguard unperforated, basis of design
2. Acceptable Manufacturers:
  - a. Armstrong
  - b. Certainteed



April 6, 2017

- c. USG
- d. Or approved equal

3. Install in 15/16" exposed tee grid.

## 2.02 CEILING SUSPENSION MATERIALS:

- A. General: Comply with ASTM C 635, as applicable to an intermediate duty suspension system. Coordinate with other work supported by or penetrating through the ceilings, including light fixtures and HVAC equipment.
- B. Attachment Devices: Size for 5 times the design load indicated in ASTM C 635, Table 1, Direct Hung.
  - 1. Hanger Wires: Galvanized carbon steel, ASTM A 641, soft temper, prestretched, yield-stress load of at least 3 times design load but not less than 12 USWG.
- C. Exposed Suspension System: Exposed systems compatible with tiles specified and as follows:
  - 1. Armstrong - 15/16" Prelude XL exposed tee grid.
  - 2. Certainteed - 15/16" classic aluminum capped stab system.
  - 3. Donn Products, Inc. DX24 system, (USG Interiors)
  - 4. Chicago Metallic Corp: 1200 system.
  - 5. Or approved equal
- E. Edge Moldings: Manufacturer's standard channel molding for grid type used for edges and penetrations of ceiling, with a single flange of molding exposed, finish to match grid.

## 2.03 MISCELLANEOUS MATERIALS:

- A. Acoustical Sealant: A heavy-bodied, non-shrinking, non-drying, non-sag grade mastic compound intended for interior sealing of concealed construction joints.
- B. Tile Cement: As recommended by tile manufacturer.

## PART 3 - EXECUTION

### 3.01 INSPECTION AND PREPARATION WORK:

- A. Installer must examine the conditions under which the acoustical ceiling work is to be performed and notify

April 6, 2017

the General Contractor, in writing, of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

- B. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid the use of less-than-half widths units at borders, and comply with reflected ceiling plans wherever possible.

3.02 INSTALLATION:

- A. General: Install material in accordance with manufacturer's printed instructions and comply with governing regulations as indicated, and industry standards applicable to the work.
- B. Install suspension systems to comply with ASTM C 636 with hangers supported only from building structural members as indicated. Locate hangers near each end and spaced 4' - 0' along direct-hung runners, unless otherwise indicated.
  - 1. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eye-screws, or other devices which are secure and appropriate for the substrate, and which will not deteriorate or fail with age or elevated temperatures.
- C. Install edge moldings at edges of each acoustical ceiling area and at locations where edge of units would otherwise be exposed after completion of the work, except where adhesively applied.
  - 1. Sealant Bed: Apply continuous ribbon of acoustical sealant, concealed pm back of vertical leg before fastening to vertical surface.
  - 2. Secure moldings to building construction by fastening with screw-anchors into the substrate through holes drilled in not more than 16" o.c. along each molding.
  - 3. Level moldings with ceiling suspension system to level tolerance of 1/8" in 12' - 0".
  - 4. Miter corners of moldings accurately to provide

April 6, 2017

hair-line joints, securely connected to prevent dislocation.

- D. Cope exposed flanges of intersection suspension system members so that flange faces will be flush (cope flange of member supported by other member) except as otherwise indicated.
- E. Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at penetrations.
- F. Install edge trim moldings where indicated and elsewhere as needed to conceal edges of acoustical units which would otherwise be exposed to view after completion of the work. Anchor with fasteners, or if not possible, secure in place with permanent adhesive.

3.03 CLEANING AND PROTECTION:

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and required to permanently eliminate evidence of damage.
- B. The Installer shall advise the General Contractor of required protection for the acoustical panel ceilings, including temperature and humidity limitations and dust control, so that the work will be without damage and deterioration at the time of acceptance by the Owner.

END OF SECTION 09510



April 6, 2017

SECTION 09900 - PAINTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

- A. The extent of painting work is shown on the drawings and schedules, and as herein specified.
- B. The work includes painting and finishing of interior and exterior exposed items and surfaces throughout the project, except as otherwise indicated.
- C. The work includes field painting of exposed bare and covered pipe and ducts (excluding color coding), and of hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under the mechanical and electrical work, except as otherwise indicated.
- D. Surface preparation, priming and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of work.
- E. "Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers and other applied materials, whether used as prime, intermediate or finish coats.
- F. Paint all exposed surfaces in areas designated "paint" in "schedules," except where the natural finish of the material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint them the same as adjacent similar materials or areas.

1.03 PAINTING NOT INCLUDED:

- A. The following categories of work are not included as part of the field-applied finish work, or are included in other sections of these specifications:
  - 1. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under the various sections for structural steel,

April 6, 2017

miscellaneous metal, hollow metal work, and similar items.

2. Pre-Finished Items: Unless otherwise indicated, do not include painting when factory-finishing or installer finishing is specified for such items as (but not limited to) metal toilet enclosures, acoustic materials, casework, finished mechanical and electrical equipment including light fixtures, switchgear and distribution cabinets, but not light or power panels where exposed elevator entrance frames, doors and equipment.
3. Concealed surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas.
4. Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, unless otherwise indicated.
5. Operating Parts and Labels:
  - a. Moving parts of operating units, mechanical and electrical parts such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts will not require finish painting unless otherwise indicated.
  - b. Do not paint over any code-required labels, such as Underwriters', Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates.

1.04 SUBMITTALS:

A. Product Data:

1. For information only, submit 2 copies of manufacturer's technical information including paint label analysis and application instructions for each materials proposed for use. Transmit a copy of each manufacturer's instructions to the paint Applicator.

April 6, 2017

B. Samples:

1. Submit samples for Architect's review of color and texture only. Compliance with all other requirement is the Exclusive responsibility of the Contractor. Provide a listing of the materials and application for each coat of each finish sample.
  - a. On 12" x 12" hardboard, provide two samples of each color and material with texture to simulate actual conditions. Resubmit each sample as requested until acceptable sheen, color and texture is achieved.
  - b. On actual wood surfaces, provide two 4" x 8" samples of each stained wood finish as required. Label and identify each as to location and application.

1.05 DELIVERY AND STORAGE:

- A. Deliver all materials to the job site in original, new and unopened packages and containers bearing manufacturer's name and label, and the following information:
1. Name or title of material.
  2. Fed. Spec. Number, if applicable.
  3. Manufacturer's stock number and date of manufacturer.
  4. Manufacturer's name.
  5. Contents by volume, for major pigment and vehicle.
  6. Constituents.
  7. Thinning instructions.
  8. Application instructions.
  9. Color name and number.

April 6, 2017

1.06 JOB CONDITIONS:

- A. Apply water-base paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 50 degrees F. and 90 degrees F., unless otherwise permitted by the paint manufacturer's printed instructions.
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 45 degrees F. and 95 degrees F. unless otherwise permitted by the paint manufacturer's printed instructions.
- C. Do not apply paint in snow, rain, fog or mist; or when the relative humidity exceeds 85% or to damp or wet surfaces; unless otherwise permitted by the paint manufacturer's printed instructions.
  - 1. Painting may be continued during inclement weather only if the areas and surfaces to be painted are enclosed and heated within the temperature limits specified by the paint manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.01 COLORS AND FINISHES:

- A. Prior to beginning work, the Architect will furnish color chips for surfaces to be painted. Colors will vary from wall to ceiling and from room to room. Final selection for gloss level will be by Architect and may not necessarily be the same as scheduled.
  - 1. Use representative colors when preparing samples for review.
  - 2. Final acceptance of colors will be from samples applied on the job.
- B. Color Pigments: Pure, non-fading, applicable types to suite the substrates and service indicated.
- C. Paint Coordination: Provide finish coats which are compatible with prime paints used. Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request



April 6, 2017

from other trades, furnish information on characteristics of finish materials proposed for use, to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and reprime as required. Notify the Architect in writing of any anticipated problems using specified coating systems with substrates primed by others.

2.02 INTERIOR PAINTING SCHEDULE:

A. Concrete/Masonry Surfaces (Semi-Gloss) (Vinyl Acrylic Latex System)

1. Primer: Vinyl Acrylic Block Filler  
Benjamin Moore: Moorcraft interior and exterior block filler #173
2. Finish Coats: Vinyl Acrylic Semi-Gloss Enamel (25-35 units at 60 degrees F.), 1.5 DFT/coat.  
Benjamin Moore: (2) coats Moorcraft latex semi-gloss enamel #1416
3. Or approved equal

B. Concrete/Masonry Surfaces (Semi-Gloss): (Water Based Epoxy - Normal Exposure)

1. Primer: 100 percent Acrylic Resin Block Filler, .075 - 1.0 DFT/coat.  
Benjamin Moore: Waterborne block filler (M31/32)
2. Finish Coats: Water Based Epoxy, Semi-Gloss (20-30 units at 60 degrees F.) 3 mils DFT/coat.  
Benjamin Moore: (2) coats acrylic epoxy (M43/44)
3. Or approved equal

C. Concrete Floor Surfaces - Epoxy Paint

1. Two component 100% (+/- 1%) solids epoxy color coating.
  - a. Epoxy paint for floor and (where indicated to be painted) base shall be: Norklad 100 two component 100% solids epoxy broadcast coat 16-18 mils DFT with marble chip flakes (color to be selected from manufacturer's standard colors by Architect) over Norklad 200 100% solids epoxy base coat 12-30 mils DFT. Provide with manufacturer's recommended

HURON-CLINTON METROPOLITAN AUTHORITY  
STONY CREEK LANDING  
AEW PROJECT #0215-0038

April 6, 2017

- primer and urethane top coat.
  - b. Prepare floor per SSPC SP13 and manufacturer's specifications.
  - c. Norklad Products - Manufactured by: Original Color Chips Company, 26200 Groesbeck Hwy, Warren, MI 48089, 1-800-227-8479 or 1-586-771-6500.
    - a. Or approved equal
- D. Metal-Ferrous (Semi-Gloss): (Alkyd Enamel System, Maximum VOC content 450 grams/liter)
- 1. Primer: Modified Alkyd Resin Primer, 3 mils DFT/coat  
Benjamin Moore: iron clad retardo rust inhibitive paint, 163
  - 2. Finish Coats: Alkyd Enamel, Semi-Gloss (40-50 units at 60 degrees F.) 3.0 mils DFT/coat.  
Benjamin Moore: (2) coats satin impervo
  - 3. Or approved equal
- E. Metal - Galvanized (Semi-gloss): Code #5.13 (Acrylic Latex System)
- 1. Finish Coats: 100 percent Acrylic, Waterborne, Semi-Gloss (30-40 units at 60 degrees F.) 3.0 mils DFT/coat.  
Benjamin Moore: (2) coats DTM acrylic semi-gloss (M2a) (or approved equal)
- F. Gypsum Board (Semi-Gloss): (Acrylic Latex System)
- 1. Primer: Vinyl Acrylic Latex, 1.1 mils DFT/coat  
Benjamin Moore: Moorcraft undercoater (284)
  - 2. Finish Coats: Vinyl Acrylic Semi-Gloss (25-35 units at 60 degrees F.), 1.5 mils DFT/coat.  
Benjamin Moore: (2) coats Moorcraft latex semi gloss (276) (or approved equal)
- G. Gypsum Board (Semi-Gloss): (Water Based Epoxy System)
- 1. Primer: Vinyl Acrylic Latex, 1.1 mils DFT/coat  
Benjamin Moore: Moorcraft undercoater (284) (or approved equal)
  - 2. Finish Coats: Water Based Catalyzed Epoxy, Semi-Gloss (20-30 units at 60 degrees F.), 2.5 - 3.0

April 6, 2017

mils DFT/coat.  
Benjamin Moore: (2) coats acrylic epoxy (M43/44)  
(or approved equal)

H. Stained Woodwork: Behr, Transparent

- a. 1st Coat-Interior oil stain (TT-S-711)
- b. 2nd Coat-Bleached shellac (TT-S-300)
- c. 3rd Coat-Rubbing varnish (TT-V-86)
- d. 4th Coat-Rubbing varnish (TT-V-86)
- e. Fill open grained wood with filler complying with TT-F-336 and wipe before first varnish coat.
- f. Or approved equal

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Applicator must examine the areas and conditions under which painting work is to be applied and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Applicator.
- B. Starting of painting work will be construed as the Applicator's acceptance of the surfaces and conditions within any particular area.
- C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to the formation of a durable paint film.

3.02 SURFACE PREPARATION:

- A. General:
  1. Perform preparation and cleaning procedure in strict accordance with the paint manufacturer's instructions and as herein specified for each particular substrate condition.
  2. Remove all hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary for the complete painting of the items and adjacent surfaces.

April 6, 2017

Following completion of painting of each space or area, reinstall the removed items by workmen skilled in the trades involved.

3. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program the cleaning and painting so that contaminants from the cleaning process will not fall onto wet, newly-painted surfaces.

B. Cementitious Materials:

1. Prepare cementitious surfaces to be painted by removing all efflorescence, chalk, dust, grease, oils, and by roughening as required to remove glaze conforming to SSPC SP13.
2. Determine the alkalinity and moisture content of the surfaces to be painted by performing appropriate tests. If the surfaces are found to be sufficiently alkaline to cause blistering and burning of the finish paint, correct this condition before application of paint. Do not paint over surfaces where the moisture content exceeds that permitted by the manufacturer's printed directions.

C. Wood:

1. Clean wood surfaces to be painted of all dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer before application of the priming coat. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sandpaper smooth when dried.
2. Prime, stain, or seal wood required to be job painted immediately upon delivery to job. Prime edges, ends, faces, undersides, and backsides of such wood, including cabinets, counters, cases, paneling, etc.
3. When transparent finish is required, use spar

April 6, 2017

varnish for backpriming.

4. Seal tops, bottoms, and cut-outs of unprimed wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.

D. Ferrous Metals:

1. Clean ferrous surfaces, which are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning, conforming to SSPC SP-1 and SSPC SP-2, SSPC SP-3 or SSPC - SP7/NACE - No. 4 (brush off blast cleaning)

E. Galvanized Surfaces:

1. Clean free of oil and surface contaminants with an acceptable non-petroleum based solvent per SSPC SP-1.

3.03 MATERIALS PREPARATION:

- A. Mix and prepare painting materials in accordance with manufacturer's directions.
- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.
- C. Stir materials before application to produce a mixture of uniform density and stir as required during the application of the materials. Do not stir surface film into the material. Remove the film and if necessary, strain the material before using.

3.04 APPLICATION:

A. General:

1. Apply paint in accordance with the manufacturer's directions. Use applicators and techniques best suited for the substrate and type of material being applied.
2. Apply additional coats when undercoats, stains or other conditions show through the final coat of

April 6, 2017

paint, until the paint film is of uniform finish, color and appearance. Give special attention to insure that all surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

3. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently-fixed equipment or furniture with prime coat only before final installation of equipment.
4. Paint interior surfaces of ducts where visible through registers or grilles with a flat, non-specular black paint.
5. Paint the back sides of access panels and removable or hinged covers to match the exposed surfaces.
6. Finish exterior doors on tops, bottoms and side edges the same as the exterior faces, unless otherwise indicated.
7. Sand lightly between each succeeding enamel or varnish coat.
8. Omit the first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise indicated.

B. Scheduling Painting:

1. Apply the first-coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
2. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

C. Minimum Coating Thickness:

April 6, 2017

1. Apply each material at not less than the manufacturer's recommended spreading rate to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.

D. Mechanical and Electrical Work:

1. Painting of mechanical and electrical work is limited to those items exposed in occupied spaces and includes all exterior exposed work.

E. Prime Coats:

1. Apply a prime coat of material which is required to be painted or finished, and which has not been prime coated by others.
2. Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.

F. Pigmented (Opaque) Finishes:

1. Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.

G. Transparent (Clear) Finishes:

1. Use multiple coats to produce glass-smooth surface film of each luster. Provide a finish free of laps, cloudiness, color, irregularity, runs, brush marks, orangpeel, nail holes, or other surface imperfections.
2. Provide satin finish for final coats, unless otherwise indicated.

H. Completed Work:

1. Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in

April 6, 2017

compliance with specified requirements.

3.05 CLEAN-UP AND PROTECTION:

A. Clean-up:

1. During the progress of the work, remove from the site all discarded paint materials, rubbish, cans and rags at the end of each work day.
2. Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

B. Protection:

1. Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing and repainting, as acceptable to the Architect.
2. Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.
3. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

END OF SECTION 09900



April 6, 2017

SECTION 10160 - TOILET PARTIONS

PART 1 - GENERAL

1.01 SUBMITTALS:

- A. Plastic compartment work includes the following, where indicated:
  - 1. Floor mounted overhead-braced compartments.
  - 2. Urinal screens - wall hung.
- B. Furnish all labor and materials necessary for the completion of work in this section as shown on the contract drawings and specified herein.
- C. Work in this section shall include, but is not limited to:
  - 1. Toilet compartments, compartment doors.
  - 2. Hardware for toilet compartments.
  - 3. Shop drawings and working drawings.
  - 4. Manufacturer's guarantee/warranty.
- D. Related work specified elsewhere shall include accessories and anchorage/blocking for attachment of partitions.

1.02 PRODUCT:

- A. Submit six (6) sets of shop drawings and details for Architect's approval.
- B. Colors shall be selected from the manufacturer's full range of colors.
- C. Submit 6'' square color samples of each color and hardware samples for approval by the Architect.

PART 2 - PRODUCTS

2.01 MANUFACTURER:

- A. Provide toilet partitions and screens by one of the following manufacturer's:
  - 1. SCRANTON PRODUCTS (Santana/Comtec/Capitol) Scranton, PA.
  - 2. Legacy Polymer Products, Inc., Poly Series, Dunmore, PA.
  - 3. Ampco Products, LLC, solid plastic polyethylene, Miami, FL.
  - 4. Bradmar, Bradley Corp.
  - 5. Or approved equal

April 6, 2017

2.02 MATERIALS:

- A. Doors, panels, pilasters and privacy screens and supports shall be 1'' thick constructed from High-Density Polyethylene (HDPE) resins. Partitions and privacy screens shall be fabricated from polymer resins compounded under high pressure, forming a single component which is waterproof, nonabsorbent and has a self-lubricating surface that resists marks from pens, pencils, markers and other writing instruments. All plastic components shall be covered with a protective plastic masking.

2.03 CONSTRUCTION:

- A. Doors, panels, pilasters and privacy screens shall be 1'' thick with all edges rounded to a ¼'' radius.
- B. Doors and dividing panels shall be 55'' high and mounted at 14'' above the finished floor. Urinal screens shall be 42'' high by 24'' deep and mounted at 14'' above the finished floor. Fasten an aluminum heat sink to the bottom edges. Fasten an aluminum heat sinc to the bottom edges.
- C. Pilasters shall be 82'' high (standard) and fastened into a 3'' high pilaster shoe with a stainless steel, torx head sex bolts.

2.04 HARDWARE:

- A. Door hardware shall be as noted:
  - 1. Hinges shall be integral, fabricated from the door and pilaster with no exposed metal parts, adjustable in 30 degree increments to hold door open up to 90 degrees.
  - 2. Door strike/keeper shall be 6'' long and made of heavy-duty extruded aluminum (6436-T5 alloy) of either an anodized finish or a bright dipped anodized finish, with wrap around flanges and secured to the pilasters with stainless steel, torx head sex bolts. Bumper shall be made of extruded black vinyl.
  - 3. Latch and housing shall be made of heavy-duty extruded aluminum (6463-T5 alloy). The latch housing shall have either an anodized finish or a bright dipped anodized finish, and the slide bolt and button shall have a black anodized finish.
  - 4. Each door shall be supplied with one coat bumper/hook

April 6, 2017

and 2 door pulls made of chrome plated zamak. Outswing doors shall be supplied with a door stop made of chrome plated zamak.

- B. Plaster shoes shall be 3'' high (type 304, 20 gauge) stainless steel. Pilaster shoes shall be secured to the pilaster with a stainless steel, torx head sex bolt.
- C. Wall brackets for partitions shall be 1½'' stirrup type made of heavy-duty aluminum (6463-T5 alloy) with either an anodized or a bright dipped anodized finish. Stirrup brackets shall be fastened to pilasters and panels with stainless steel, torx head sex bolts.
- D. Headrail shall be made of heavy-duty extruded aluminum (6463-T5 alloy) with anti-grip design and integrated curtain track. The headrail shall have an anodized finish and shall be fastened to the headrail bracket by a stainless steel, torx head sex bolt, and fastened to the top of the pilasters with stainless steel, tamper resistant torx screws.
- E. Headrail brackets shall be of heavy duty extruded aluminum with an anodized finish or 20 gauge stainless steel with a satin finish, and secured to the wall with #14 stainless steel screws.

### PART 3 - EXECUTION

#### 3.01 PREPARATION:

- A. Examine areas to receive toilet partitions/compartments and urinal screens for correct height and spacing of anchorage/bolting and plumbing fixtures that may affect installation of partitions/compartments. Report any discrepancies to the Architect.
- B. Take complete and accurate measurements of complete toilet compartment locations.
- C. Start of work constitutes acceptance of job.

#### 3.02 INSTALLATION:

- A. Install partitions rigid, straight, plumb, and level, with plastic laid out as shown on shop drawings and manufacturer's installation instructions.
- B. All doors and panels to be mounted at 14'' above finished floor.

April 6, 2017

- C. Clearances at vertical edges of doors shall be uniform top to bottom and shall not exceed  $3/8''$ .
- D. Clearances at pilasters and panels shall be uniform top to bottom and shall not exceed  $1/2''$ .
- E. Clearances between panels and walls shall be uniform top to bottom and shall not exceed  $1''$ .
- F. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.
- G. Finished surface shall be cleaned after installation and be left free of all imperfections.

3.03 WARRANTY:

- A. Submit manufacturer's standard guarantee for HDPE plastic against breakage, corrosion, and delamination under normal conditions for 15 years from the date of receipt by the customer. If materials are found to be defective during that period for reasons listed above, the materials will be replaced free of charge. (Labor not included in warranty).

END OF SECTION 10160

April 6, 2017

SECTION 10400 - IDENTIFICATION DEVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 1, General Requirements, are included as a part of this Section as though bound herein.

1.02 SUMMARY

- A. Provide labor, materials, and equipment necessary for the complete installation of identifying devices as indicated, including:
  - 1. Interior Signage
  - 2. Exterior signage

1.03 SUBMITTALS:

- A. Submit product data for each type of sign specified, including details of construction relative to materials, dimensions of individual components, profiles, and finishes.
- B. Submit Shop Drawings showing fabrication and erection of signs. Include plans, elevations, and large scale sections of typical members and other components. Show anchors, grounds, layout, reinforcement, accessories, and installation details.
- C. Signage shall have 2 colors, background and letters. Match sample provided by Architect.
- D. Provide samples for verification of color, pattern, and texture selected and compliance with requirements indicated:
  - 1. Cast Acrylic Sheet: Provide a sample panel not less than 8-1/2 inches by 11 inches for each material, color, texture, and pattern required. On each panel include a representative sample of the graphic image process required, showing graphic style, and colors and finishes of letters, numbers, and other graphic devices.

April 6, 2017

1.04 QUALITY ASSURANCE:

- A. Reference Codes and Specifications: Standard Building Code.
- B. Signage shall be provided to conform with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and State and Local Regulations.

PART 2 - PRODUCTS

2.01 MANUFACTURER:

- A. Manufacturers: (Interior Signage) Subject to compliance with requirements, provide signage by one of the following:
  - 1. ASI Sign Systems, Indianapolis, Indiana; Cincinnati, Ohio; Cleveland, Ohio
  - 2. Jacob Design, Grand Rapids, Michigan
  - 3. Diskey Sign Corp. Fort Wayne, Indiana
  - 4. Andco Industries Corp. Greensboro, North Carolina
  - 5. Southwell Company, San Antonio, Texas
  - 6. Roban, Lakemore, Ohio
  - 7. Best Signs, Montrose, Colorado
  - 8. Bayuk Graphic Systems, Inc. (CW Series)
  - 9. Or approved equal
- B. Products of other manufacturers will be considered for acceptance provided they equal or exceed the material requirements and functional qualities of the specified product. Requests for Architect's approval must be accompanied by the "Substitution Request Form" and complete technical data for evaluation. All materials for evaluation must be received by the Project Manager and Specification Department at least 10 days prior to bid due date. Additional approved manufacturers will be issued by Addendum.

A.02 MATERIALS:

- A. Cast Acrylic Sheet: Provide cast (no extruded or continuous cast) methyl methacrylate monomer plastic sheet, in sizes and thicknesses indicated, with a minimum flexural strength of 16,000 psi when tested according to ASTM D 790, with a minimum allowable continuous service temperature of 176 degrees F and of the following general types:
  - 1. Thickness: 1/8 inch.
  - 2. Colors as specified.

April 6, 2017

- B. Fasteners: Use concealed fasteners fabricated from metals that are not corrosive to the sign material and mounting surface.
- C. Anchors and Inserts: Use nonferrous metal or hot dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete masonry work.
- D. Colored Coatings for Acrylic Plastic Sheet: Use colored coatings, including inks and paints for copy and background color that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and are nonfading for the application intended.

2.03 INTERIOR SIGNAGE:

A. Signage, General:

- 1. Graphic Process; Raised letters and Braille shall be formed as an integral part of the sign face. Surface applied letters and Braille are not allowed.
- 2. Letters: Letters and numbers shall have width to height ratio between 3:5 and 1:1 and a stroke width to height ratio between 1:5 and 1:10. Letters and numbers shall be raised 1/32 inch, uppercase, sans serif or simple sans serif type and shall be accompanied with Grade 2 Braille. Raised characters shall be 5/8 inch high minimum and 2 inches high maximum.
- 3. Ease sign edge and radius corners 3/8 inch.
- 4. Material
  - a. Acrylic plastic

B. Toilet Room Handicapped Signs

- 1. Provide one sign depicting International Men/Women Symbol along with the words "Men" or "Women" indicated on the sign at each toilet room, equipped with facilities for the handicapped as indicated on the Signage Schedule.

C. Interior Room Name and Number Signs

- 1. Layout of room name and number shall be as directed by the Architect.
- 2. Number of signs required:
  - a. Rooms indicated on Signage Schedule on the

April 6, 2017

Drawings.

3. Provide signs with clear acrylic name plate as indicated on Signage Types.

#### 2.04 DEDICATORY PLAQUE

- A. Provide 24"x36" cast aluminum plaque with leatherette textured oxidized background with polished letters. Plaque shall be beveled edge and shall have thereon the following:
  1. Board of Directors and Titles
  2. Architect, General Contractor and Titles
  3. Date
  4. Stony Creek Landing

### PART 3 - EXECUTION

#### 3.01 INSTALLATION:

- A. General: Located sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
  1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.
- B. Wall Mounted Panel Signs: Attach panel signs to wall surfaces using the method indicated below:
  1. Mount with adhesive as recommended by manufacturer.
  2. Mount with nonremovable oval head screws, using plastic plugs where mounted on masonry.
- C. Dedication Plaque: Mount plaques using the standard method recommended by the manufacturer for the type of surface indicated.
  - a. Concealed Mounting: Mount the plaques by inserting threaded studs into tapped lugs on the back of the plaque. Set in predrilled holes fill with quick setting cement.
  - b. Face Mounting: Mount plaques using exposed fasteners with rosettes attached through the face of the plaque into the wall surface.

#### 3.02 CLEANING AND PROTECTION

- A. After installation, clean soiled sign surfaces according to the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION 10400



April 6, 2017

SECTION 11400 - FOODSERVICE EQUIPEMNT

- ITEM 1 - WALK-IN COOLER (1 REQ'D)  
Kolpak Model CUSTOM FK8-814-C8-F8  
WALK-IN /FREEZER Walk-In Combo Kold-Front, 8'-6.25" H,  
7'-9" W, 14'-0" L, with floor, 3/4 hp. medium temp  
(+35F) with pre-charged PC69MOP, 7.4 amps, 208-  
230/60/1 & AM26-70, 1.8 amps, 115/60/1; 2-1/2 hp. low  
temp (-10F) with pre-charged PC249LOP, 19.2 amps, 208-  
230/60/1 & EL26-92, 0.9 Fan amps, 8.7 Htr amps, 208-  
230/60/1, indoor/outdoor remote unit, 26 ga. embossed  
galvalume interior & exterior, .100 smooth aluminum  
floor 2" dial thermometer  
Or approved equal
- ITEM 1A - COOLER BLOWER COIL (1 REQ'D)  
Kolpak Model AM-26-70  
COOLER BLOWER COIL  
Or approved equal
- ITEM 1B - COOLER CONDENSER (1 REQ'D)  
Kolpak Model PC69MOP  
COOLER CONDENSER  
Or approved equal
- ITEM 1C - FREEZER BLOWER COIL (1 REQ'D)  
Kolpak Model EL26-92  
FREEZER BLOWER COIL  
Or approved equal
- ITEM 1D - FREEZER CONDENSER (1 REQ'D)  
Kolpak Model PC249LOP  
FREEZER CONDENSER  
Or approved equal
- ITEM 2 - WALK-IN SHELVING (1 REQ'D)  
Metro Model METRO Q  
WALK-IN SHELVING  
Or approved equal
- ITEM 3 - DRY STORAGE SHELF (1 REQ'D)  
Metro Model METRO Q  
DRY STORAGE SHELF  
Or approved equal

April 6, 2017

- ITEM 4 - BEVERAGE COUNTER (1 REQ'D)  
Advance Tabco Model BEV-30-96R Dimensions: 46(h) x 96(w) x 30(d)  
Beverage Table, 96" L, with 14" x 16" x 12" deep sink on right with faucet 4"OC, urn trough 5" x 36" with no splash drain plate, 14 gauge 304 series stainless steel top with no drip counter top edge, 10" x 2" back splash, enclosed stainless steel base with bottom & intermediate undershelves, stainless steel legs  
Or approved equal
- ITEM 5 - FROZEN DRINK MACHINE, NON-CARBONATED, BOWL TYPE (1 REQ'D)  
Bunn-O-Matic Model 34000.0012 Dimensions: 31.9(h) x 16(w) x 25(d) 34000.0012  
ULTRA-2 Ultra Gourmet Ice® Frozen Drink Machine, counter model, (2) 3 gallon hoppers, internally monitored refrigeration system, touchpad display, reversing auger design freeze time & reduces air mixing, flat lid, stainless steel & white decor, cord attached, 120v/60/1-ph, 12amps, NEMA 5-15P, NSF, ETL  
Or approved equal
- ITEM 6 - BEVERAGE DISPENSER, ELECTRIC (HOT) (1 REQ'D)  
Curtis Model CAFEP4CS10000 Dimensions: 31.13(h) x 15(w) x 22.25(d)  
Primo Cappuccino™ Machine, 4 station dispensers, 4 lb removable hopper capacity, 5-3/10 gallons per hour, 2 gallon tank volume, 8" cup clearance, changeable door display, touch key control panel, one touch hot water cleaning system, removable drip tray, angled whipping chamber, black décor, NEMA 5-15P, 120v/50-60/1-ph, 1800 watts, 15 amps, 1 GPM, 2W+G, 20-90 psi, 1/4" flare fitting, UL, cUL, NSF  
Or approved equal
- ITEM 7 - COFFEE/TEA MAKER (1 REQ'D)  
Curtis Model CBS10000  
Coffee/Tea Maker  
Or approved equal
- ITEM 8 - WORK TABLE, STAINLESS STEEL TOP (1 REQ'D)  
Advance Tabco Model KSS-306 Dimensions: 40.5(h) x 72(w) x 30(d)

April 6, 2017

Work Table, 72"W x 30"D, 14 gauge 304 series stainless steel top with 5"H backsplash, 18 gauge stainless steel adjustable undershelf, stainless steel legs with stainless steel bullet feet, NSF  
Or approved equal

ITEM 9 - SHELVING, WALL-MOUNTED (1 REQ'D)  
Advance Tabco Model WS-15-72 Dimensions: 13.5(h) x 72(w) x 15(d)  
Shelf, wall-mounted, 72"W x 15"D, 1-5/8" bullnose front edge, 1-1/2" rear upturn, 18/430 satin finish stainless steel, NSF  
Or approved equal

ITEM 10 - SPARE NO.

ITEM 11 - SPARE NO.

ITEM 12 - WORK TABLE, STAINLESS STEEL TOP (1 REQ'D)  
Advance Tabco Model KSS-306 Dimensions: 40.5(h) x 72(w) x 30(d)  
Work Table, 72"W x 30"D, 14 gauge 304 series stainless steel top with 5"H backsplash, 18 gauge stainless steel adjustable undershelf, stainless steel legs with stainless steel bullet feet, NSF With integral sink 15x20"x12" deep, deck mount T&S Pantry faucet and lever waste  
Or approved equal

ITEM 13 - CLEAN DISH RACK (1 REQ'D)  
Metro Model METRO Q  
CLEAN DISH RACK  
Or approved equal

ITEM 14 - CLEAN DISH SHELF (1 REQ'D)  
Metro Model METRO SEAL II  
CLEAN DISH SHELF  
Or approved equal

ITEM 15 - THREE (3) COMPARTMENT SINK (1 REQ'D)  
Advance Tabco Model 94-23-60-18RL Dimensions: 45(h) x 103(w) x 27(d)  
Regaline Sink, 3-compartment, with left & right-hand drainboards, 20" front-to-back x 20"W sink compartments, 14" deep, with 11"H backsplash,

April 6, 2017

stainless steel legs with welded front-to-rear &  
adjustable left-to-right cross rails, 18" drainboards,  
1" adjustable bullet feet, 14 gauge 304 series  
stainless steel, overall 27" F/B x 103" L/R, NSF,  
lever handle wastes  
Or approved equal

ITEM 16 - PRE-RINSE FAUCET ASSEMBLY, WITH ADD ON FAUCET(1  
REQ'D)  
T&S Brass Model B-0133-ADF12-BC  
EasyInstall Pre-Rinse Unit, 8" wall mount, 12" swing  
nozzle, 44" stainless steel flex hose, 6" wall  
bracket, 1/4 turn compression cartridge, lever handle,  
stream regulator tip, add-on faucet, .65 GPM spray  
valve, low lead, 1/2" NPT, EPA2005 compliant, NSF  
(B-0107-C)  
Or approved equal

ITEM 17 - HAND SINK (1 REQ'D)  
Advance Tabco Model 7-PS-60 Dimensions: 13(h) x  
17.25(w) x 15.25(d)  
Hand Sink, wall model, 14" wide x 10" front-to-back x  
5" deep bowl, 20 gauge 304 series stainless steel,  
with splash mounted faucet, basket drain, wall  
bracket, NSF, cCSAus  
Or approved equal

ITEM 18 - FRY WARMER (1 REQ'D)  
APW Wyott Model CFHS-15  
FRY WARMER  
Or approved equal

ITEM 20 - SPARE NO.

ITEM 21 - SPARE NO.

ITEM 22 - Exhaust hood (1 REQ'D)  
Custom Model CUSTOM see hood drawings for size and  
detail  
Or approved equal

ITEM 22A -EXHAUST FAN (1 REQ'D)  
Custom  
EXHAUST FAN

April 6, 2017

ITEM 22B -MUA UNIT (1 REQ'D)

ITEM 23 - FRYER, GAS, FLOOR MODEL, FULL POT (1 REQ'D)

Pitco Frialator Model SG14RS

Solstice Fryer, gas, floor model, full frypot, 40-50 lb. oil capacity, millivolt control, stainless steel tank, front, door & sides, 122,000 BTU, NSF, CE, CSA Flame, CSA Star, AuGA  
Or approved equal

ITEM 24 - GRIDDLE, GAS, COUNTERTOP (1 REQ'D)

Star Model 836TA Dimensions: 18(h) x 36(w) x 32.38(d)  
(QUICK-SHIP) Ultra-Max® Griddle, countertop gas, 36" W x 24" D cooking surface, 1" thick steel griddle plate, 150° - 550° F embedded mechanical snap-action thermostat every 12", 5" tapered wrap-around splash guard, 3-1/2" front grease trough, 6 qt. stainless steel grease drawer, heavy-duty metal knobs, standing pilot, welded steel frame with stainless steel exterior, 4" stainless steel legs with 1-5/8" adjustment, 90,000 BTU, cULus, UL EPH, complete with s.s. stand  
Or approved equal

ITEM 25 - FIRE SUPPRESSION SYSTEM (1 REQ'D)

Custom Model UL 300

FIRE SUPPRESSION SYSTEM complete with drawings and inspections as required by Code  
Or approved equal

ITEM 26 - SHELVING, WALL-MOUNTED (1 REQ'D)

Advance Tabco Model WS-18-60 Dimensions: 16.5(h) x 60(w) x 18(d)

Shelf, wall-mounted, 60"W x 18"D, 1-5/8" bullnose front edge, 1-1/2" rear upturn, 18/430 satin finish stainless steel, NSF  
Or approved equal

ITEM 27 - REFRIGERATED WORK TOP (1 REQ'D)

True Food Service Equipment Model TWT-60 Dimensions: 33.38(h) x 60.38(w) x 30.13(d)

Work Top Refrigerator, two-section, stainless steel top with rear splash, front & sides, (2) stainless

April 6, 2017

steel doors, (4) shelves, aluminum interior with stainless steel floor, (2) stainless steel doors, 5" castors, rear mount, 1/5 HP, 115v/60/1, 5.1 amps, NEMA 5-15P, cULus, UL EPH Classified, CE, MADE IN USA  
Or approved equal

ITEM 28 - PIZZA PREPARATION REFRIGERATOR (1 REQ'D)  
True Food Service Equipment Model TPP-60 Dimensions: 35.38(h) x 60.25(w) x 33.63(d)  
Pizza Prep, 33-41°F pan rail, stainless steel cover, 19.5"D cutting board, stainless steel front, top & sides, (2) full doors, (4) adjustable wire shelves, includes (8) 1/3 size clear polycarbonate insert pans (top), aluminum interior with stainless steel floor, 5" castors, front breathing, 1/3 HP, 115v/60/1, 7.9 amps, NEMA 5-15P, UL EPH Classified, cULus, CE, MADE IN USA  
Or approved equal

ITEM 29 - HOT DOG GRILL (1 REQ'D)  
Star Model 30  
Hot Dog Grill with sneeze guard  
Or approved equal

ITEM 30 - SPARE NO.

ITEM 31 - SPARE NO.

ITEM 32 - COMPUTER, PRINTERS, W. POS (1 REQ'D)  
Custom  
COMPUTER, PRINTERS, w. POS

ITEM 33 - DISPLAY CASE, HOT FOOD, COUNTERTOP (1 REQ'D)  
Star Model HFD-1-P Dimensions: 28.25(h) x 15(w) x 15(d)  
Humidified Display Cabinet, countertop, single door, see-thru design, with pretzel rack 15" wide x 15" deep, stainless steel construction, UL, cULus  
Or approved equal

ITEM 34 - Sales Counter (1 REQ'D)  
Custom Model supplied by Millwork Contractor, see Archt. Specifications, grommet holes and POS drawer shelves

April 6, 2017

Or approved equal

- ITEM 35 - REACH-IN FREEZER (1 REQ'D)  
True Food Service Equipment Model STA1F-1G Dimensions:  
77.75(h) x 27.5(w) x 33.75(d)  
SPEC SERIES® Freezer, Reach-in, -10°F, one-section,  
stainless steel front & sides, (1) glass door with  
lock, cam-lift hinges, digital temperature control,  
aluminum interior, (3) chrome shelves, LED interior  
lights, 5" castors, 3/4 HP, 115v/60/1, 10.4 amps, NEMA  
5-15P, MADE IN USA  
Or approved equal
- ITEM 36 - PASS-THRU REFRIGERATOR (1 REQ'D)  
True Food Service Equipment Model STA1RPT-1G-1G  
Dimensions: 77.75(h) x 27.5(w) x 36.13(d)  
SPEC SERIES® Pass-thru Refrigerator, one-section,  
stainless steel front & sides, (1) glass door front &  
rear with locks, cam-lift hinges, digital temperature  
control, aluminum interior, (3) chrome shelves, LED  
interior lights, 5" castors, 1/3 HP, 115v/60/1, 4.8  
amps, NEMA 5-15P, MADE IN USA (THIS MODEL ALSO  
AVAILABLE IN HYDROCARBON REFRIGERANT)  
Or approved equal
- ITEM 37 - MILK SHAKE DISPENSER (1 REQ'D)  
Metro Model CS700  
MILK SHAKE DISPENSER  
Or approved equal
- ITEM 38 - REFRIGERATED FOUNTAINETTE (1 REQ'D)  
Silver King Model SKF2A  
Refrigerated Fountainette  
Or approved equal
- ITEM 39 - CUSTOM (1 REQ'D)  
Custom Model CUSTOM  
STAINLESS ELECTRICAL CHASE  
Or approved equal
- ITEM 40 - SPARE NO.
- ITEM 41 - SPARE NO.
- ITEM 42 - BLENDERS (1 REQ'D)

April 6, 2017

Custom Model HGBSS  
BLENDERS  
Or approved equal

- ITEM 43 - AIRPOT (1 REQ'D)  
Curtis Model TLXA2201G000 Dimensions: 16(h) x 6(d)  
ThermoPro® Airpot Dispenser, 2.2 liters (74 oz.)  
capacity, lever action with handle, removable top &  
pump, lockable lid, glass liner, stainless steel  
exterior, (priced per each, minimum order of 6 units  
required)  
Or approved equal
- ITEM 44 - ICE CREAM DIPPING CABINET (1 REQ'D)  
Master-Bilt Products Model DC-4D Dimensions: 34.13(h)  
x 30.63(w) x 30.13(d)  
Ice Cream Dipping Cabinet, dip (5) 3 gallon, store (2)  
3 gallon, cold-wall evaporator, painted textured  
galvanized steel exterior, galvanized steel interior,  
stainless steel top with anti-condensate heater, flip  
lid, temperature range 10° to -10°F, 1/4 hp,  
115v/60/1-ph, 5.7 amps, 9' cord, NEMA 5-15P, cULus,  
NSF  
Or approved equal
- ITEM 45 - SPARE NO.
- ITEM 46 - SHELVING, WALL-MOUNTED (1 REQ'D)  
Advance Tabco Model WS-18-36 Dimensions: 16.5(h) x  
36(w) x 18(d)  
Shelf, wall-mounted, 36"W x 18"D, 1-5/8" bullnose  
front edge, 1-1/2" rear upturn, 18/430 satin finish  
stainless steel, NSF  
Or approved equal
- ITEM 47 - MOP SINK AND RACK (1 REQ'D)  
Custom  
MOP SINK AND RACK by MC  
Or approved equal
- ITEM 48 - WATER HEATER (1 REQ'D)  
Custom  
WATER HEATER by MC  
Or approved equal



April 6, 2017

- ITEM 49 - REFRIGERATED WORK TOP (1 REQ'D)  
True Food Service Equipment Model TWT-60 Dimensions:  
33.38(h) x 60.38(w) x 30.13(d)  
Work Top Refrigerator, two-section, stainless steel  
top with rear splash, front & sides, (2) stainless  
steel doors, (4) shelves, aluminum interior with  
stainless steel floor, (2) stainless steel doors, 5"  
castors, rear mount, 1/5 HP, 115v/60/1, 5.1 amps, NEMA  
5-15P, cULus, UL EPH Classified, CE, MADE IN USA  
Or approved equal
- ITEM 50 - SPARE NO.
- ITEM 51 - SPARE NO.
- ITEM 52 - SHELVING, WALL-MOUNTED (1 REQ'D)  
Advance Tabco Model WS-18-60 Dimensions: 16.5(h) x  
60(w) x 18(d)  
Shelf, wall-mounted, 60"W x 18"D, 1-5/8" bullnose  
front edge, 1-1/2" rear upturn, 18/430 satin finish  
stainless steel, NSF  
Or approved equal
- ITEM 53 - FOOD TOPPING WARMER, COUNTERTOP (1 REQ'D)  
Star Model 11WLA-HS Dimensions: 18.75(h) x 13.25(w) x  
15.2(d)  
Lighted Food Warmer, countertop, electric, 11 quart  
capacity, pump with heated spout, for use with #10 can  
or 11 qt. round bain marie, includes: nacho, fudge,  
chili, chili sauce, cheese sauce & BBQ signs,  
stainless steel construction, cULus, UL EPH Classified  
Or approved equal
- ITEM 54 - WARMING DRAWER, FREE STANDING (1 REQ'D)  
Hatco Model HDW-2 Dimensions: 21.13(h) x 29.5(w) x  
22.63(d)  
Warming Drawer Unit, Free Standing, two drawers,  
includes (1) standard 6" deep food pan per drawer per  
drawer, stainless steel construction, thermostatic  
controls, 4" legs, NSF, cULus, Made in USA  
Or approved equal

April 6, 2017

- ITEM 55 - MOBILE HAND SINK (1 REQ'D)  
John Boos Model MHS-2624 Dimensions: 35.5(h) x 26(w) x 24(d)  
Mobile Hand Sink, self contained, 26"W x 24"D x 35-1/2"H, 2-1/2 gallon water heater, removable (5) gallon fresh water tank and (7) gallon waste water tank, 16 gauge stainless steel top and panel, 8" rear riser and side splashes, 20 gauge door with magnetic catch, (1) 10"W x 14" front-to-back x 10" deep sink bowl, with free flow drain, gooseneck faucet, 4" locking casters, GFI outlet with 6 foot cord, 15 amp, 120V/60/1-PH, UL  
Or approved equal
- ITEM 56 - CUSTOM (1 REQ'D)  
S.S. Utility counter, s.s. cabinet base, 14 ga top with 4" back splash, bottom and intermediate shelf  
With doors and locks, casters, 2 locking type, 8'x30"  
Or approved equal
- ITEM 57 - CHARBROILER, GAS, OUTDOOR GRILL (1 REQ'D)  
Magikitch'n Model LPAGA-30-SS Dimensions: 36(h) x 30(w) x 24(d)  
Magicater AGA Approved Transportable Gas Grill, 30", stainless steel front, sides, back & service shelf, stainless steel construction, stainless steel radiants, water tubs, heavy duty cooking grid, stainless steel legs with 6"casters, complete gas system, spark ignitor, (1) 40 pound tank in removable tank cart  
Or approved equal
- ITEM 58 - PIZZA PREPARATION REFRIGERATOR (1 REQ'D)  
True Food Service Equipment Model TPP-44 Dimensions: 35.38(h) x 44.5(w) x 33.63(d)  
Pizza Prep, 33-41°F pan rail, stainless steel cover, 19.5"D cutting board, stainless steel front, top & sides, (1) door, (2) adjustable wire shelves, includes (6) 1/3 size clear polycarbonate insert pans (top), aluminum interior with stainless steel floor, 5" castors, front breathing, 1/3 HP, 115v/60/1, 8.6 amps, NEMA 5-15P, UL EPH Classified, cULus, CE, MADE IN USA  
Or approved equal

April 6, 2017

ITEM 59 - REFRIGERATED MERCHANDISER (1 REQ'D)  
True Food Service Equipment Model GDM-33-HC-LD  
Dimensions: 78.63(h) x 39.5(w) x 29.63(d)  
Refrigerated Merchandiser, two-section, (8) shelves,  
laminated vinyl exterior, white interior with  
stainless steel floor, (2) Low-E thermal glass sliding  
doors, LED interior lights, R290 Hydrocarbon  
refrigerant, 1/2 HP, 115v/60/1, 6.3 amps, NEMA 5-15P,  
cULus, UL EPH Classified, CE, MADE IN USA  
1 ea Self-contained refrigeration standard  
1 ea Warranty - 5 year compressor (self-contained  
only), please visit [www.Truemfg.com](http://www.Truemfg.com) for  
specifics  
1 ea Warranty - 3 year parts and labor, please  
visit [www.Truemfg.com](http://www.Truemfg.com) for specifics  
1 ea Exterior: Permanent non-peel non-chip black  
vinyl, standard  
1 ea Interior: White aluminum, standard  
1 ea Illuminated sign decal: S-TS-01 "TRUE  
Stripe" graphic, standard  
1 st Castors, 2-1/2", set of 4  
1 ea Model 929831 TrueFlex bottle organizer, per  
shelf  
Or approved equal



April 6, 2017

## SECTION 15010 - MECHANICAL GENERAL PROVISIONS

### PART 1. GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and Division 1, General Requirements, which are hereby made a part of this specification.

#### 1.02 DEFINITIONS

- A. Following definitions of terms and expressions used in mechanical sections are in addition to listing given under Standard A.I.A. Form.
- B. "Provide" shall mean "furnish and install" or "furnish labor and required material for installation of".
- C. "Concealed" shall mean hidden from sight as in trenches, chases, furred spaces, pipe shafts or hung ceiling, crawl spaces and service tunnels.
- D. "Exposed" shall mean not "concealed" as defined above.
- E. "Piping" includes in addition to pipe, also fittings, valves, hangers, other accessories which comprise a system.

#### 1.03 CODES, ORDINANCES, PERMITS, INSPECTION FEES, ASSESSMENTS

- A. All materials, equipment required for work and their installation shall conform to laws of State of Michigan, including the 2003 Michigan Mechanical Code and the 2003 Michigan Plumbing code, and comply with all City and County codes, ordinances, rules, regulations. Permits shall be secured for all connections, inspections, tests required in connection with work.
- B. Upon completion of work, Contractor shall secure, present to Owner certificate of inspection and approval from department having jurisdiction over work, if such be issued. All associated fees are to be included in the contractor's proposal.
- C. All electrical equipment shall be furnished with Underwriters' Laboratory label. Entire mechanical installation shall conform to State, Local Fire Department regulations.

April 6, 2017

#### 1.04 MECHANICAL DRAWINGS

- A. Accompanying mechanical drawings show arrangement, general design, extent of work, are more or less diagrammatical with equipment in its general location.
- B. Contractor is required to provide an installation that conforms to above codes, laws, rules and or regulations whether specifically detailed or not.
- C. Drawings are not intended to be scaled for rough-in nor to serve as shop drawings. Manufacturer's installation details and recommendations are to be consulted for all equipment installation.

#### 1.05 EQUIPMENT DESIGN

- A. Mechanical equipment and/or systems are based on a certain manufacturer with brand names, models, etc., for which the system is designed to give the Owner the best possible design benefit.
- B. If equipment is used that is from listed manufacturer but is not the exact model specified, it shall be the sole responsibility of the Prime Bidder (Mechanical Contractor) submitting material or equipment items to guarantee that the item will do and function as the specified material or equipment and will in no way alter the design of the structure, will not require any additional electrical wiring, controls, etc., or any additional or greater mechanical piping.
- C. If materials or equipment used require altering of any of the above stated or other unforeseen conditions, it shall be the responsibility of the Prime Bidder making the substitutions to pay for any and all increased costs in relation to making the material or equipment fit the area and function to the complete satisfaction of the Owner, Architect.

#### 1.06 COOPERATION OF CONTRACTORS

- A. The Contractor, before starting operation, and from time to time as the work progresses, shall examine the work installed by other trades, insofar as it influences work in this contract and shall properly notify the Architect in writing of any existing conditions that will prevent the contractor from doing work as specified.
- B. Should the contractor start work without such notification

April 6, 2017

and without inspection, it shall be construed as acceptance of all pending work and as a waiver of all claims of/or questions as to suitability of any preceding work. The contractor shall replace in the proper manner, at his/her own expense, all work which may have to be removed to correct his/her work and have his/her work conform with the plans and specifications requirements.

- c. Any discrepancies which may occur on drawings and/or in specifications shall be called to attention of the Architect prior to submitting bids. No changes or alterations in work shall be made because of said discrepancies until approval of such changes or alterations has been secured from Architect.
- D. In the event of disputes arising because of discrepancies between drawings of Architectural, Mechanical and/or Electrical trades, such disputes shall be taken up with Architect whose decision will be final.
- E. The contractor shall also check the drawings of other trades and coordinate work in advance with that of the other trades to eliminate possible interferences between his work and the work of other trades. Where such interferences are unforeseen or develop which cannot be resolved without deviation from the requirements of the drawings and specifications, the contractor shall immediately notify the Architect before proceeding further with the involved portion of the work.

#### 1.07 EXAMINATION OF PREMISES

- A. Before submitting proposals for work, each bidder shall be held to have examined premises and be satisfied as to existing conditions under which work will be performed.
- B. No extras will be allowed on account of failure to make above examination or neglect to include all material and labor required to complete work.
- c. Invert elevations of existing sewers shall be confirmed in "field" before proceeding with new sewer installation and connection.

#### 1.08 SHOP DRAWINGS

- A. See General Conditions.
- B. Submit sets of shop drawings as required in Section 01340 and obtain review of same from the Architect before

April 6, 2017

ordering equipment or installation of same. Equipment ordered or installed without the prior review of the Architect will be subject to non-acceptance.

- c. Shop drawings shall consist of manufacturer's cuts, scale drawings, or catalogs, including dimensions, description, literature and complete characteristics of the equipment, capacity curves, pressure drops, code requirements, motor and drive data.
- D. Shop drawings are required on all equipment furnished under this division. All shop drawings shall be reviewed by the contractor before submitting same to the Architect for review and the Contractor shall indicate his/her review on the shop drawings.
- E. A complete set of shop drawings shall be included in the instruction and maintenance manuals specified below.

#### 1.09 START-UP SERVICE

- A. The Contractor shall arrange with the manufacturer for providing complete start-up service to be satisfactory to the Architect and Owner for the following equipment: boilers, air handling units, condensing units, pumps, temperature and equipment control operations. Notify the Owner and the Architect of all start-up services so representatives may be present.

#### 1.10 INSTRUCTION OF OWNER'S PERSONNEL

- A. The Owner's personnel shall be fully instructed in the operation and maintenance of the equipment and system. Arrangements with the Owner, the Architect, the subcontractor and/or the sales representative shall be made by the Contractor and the instructions shall be given to the Owner in the presence of the above mentioned parties by the persons competent in the field. Video taping of specific instructions should be included with the instruction manuals. This shall be done before the final payment and occupancy of the Owner.

#### 1.11 AS-BUILT DRAWINGS

- A. A set of record drawings, consisting of marked set of drawings, denoting and dimensioning accurately all changes in elevation, location, and size of material deviation from the drawings shall be kept concurrently with the progress of the installation of material. In addition, all off-sets



April 6, 2017

and valves are to be recorded. Upon completion of the work, the contractor shall submit this set of "as-builts" to Architect for review and transmittal to Owner.

#### 1.12 INSTRUCTION AND MAINTENANCE MANUALS

- A. At completion of the project and prior to final payment of the project, the contractor shall submit three hard bound maintenance and instruction manuals to the Architect for review for the Owner's use.
- B. The manuals shall consist of all details of care, maintenance, operation, parts, manufacturer's name, model number, nearby manufacturer's representatives name, address, and telephone number; for all major components of various systems. Also, include sequence of operation, control equipment literature, wiring and control drawings, certificates of guarantee, certificates of inspection, test reports, mechanical system balancing report complete with all water and air system distribution, as explained in various sections of the specifications.
- C. The Contractor shall provide a job-specific video tape to summarize the essential simplified control and maintenance sequences, in order to help the Owner's personnel understand the first-sight operation. The tape(s) shall be brief, specific, and prepared on site using the actual installed equipment. Tapes should be less than one hour in length. General manufacturer's tapes are not acceptable.
- D. All instruction manuals shall be reviewed by the Architect. The Architect reserves the right to ask for any information that he deems necessary to be included in the manuals.

#### 1.13 GUARANTEE

- A. Each Contractor shall furnish, over and above manufacturer's guarantees, written guarantee covering all materials, workmanship, under his contract for period of one year from date of certificate of substantial completion.
- B. Under above guarantee, Contractor agrees to remedy any defects in materials and workmanship appearing during guarantee period and to pay for any damage to other work resulting therefrom.

#### 1.14 PROTECTION OF WORK

- A. Duct, piping and construction openings and excavating

April 6, 2017

required for mechanical work shall be covered, capped or barricaded when work is not in progress.

1.15 CLEANING UP

- A. Contractor shall at all times keep premises free from accumulations of waste materials or rubbish caused by his employees or work, and at completion of work, he shall remove all his rubbish, tools, surplus materials, from and about building, and shall leave his work "broom clean".

1.16 CUTTING AND PATCHING

- A. Unless otherwise noted, all cutting and patching that may be necessary for installation of mechanical system specified shall be by Mechanical Trades under direction and to satisfaction of Architect. No cutting of structural work shall be permitted without Architect's review.

1.17 HANDLING OF EQUIPMENT, HOISTING

- A. Contractor shall receive, properly house, handle, hoist, deliver to proper location equipment and other material required for his contract.

END OF SECTION

April 6, 2017

## SECTION 15050 - BASIC MATERIALS AND METHODS

### PART 1. GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Attention is directed to Division 0, Bidding and Contract Requirements, Division 1, General Requirements, and Division 15010, General Provisions, which are hereby made a part of this specification.

#### 1.02 REGULATORY REQUIREMENTS

- A. Fire Protection: Conform to rules and regulations of the Office of Fire Safety, Bureau of Construction Codes, the State of Michigan Mechanical Code, and Washington Township Fire Department.
- B. Plumbing: Conform to State of Michigan Plumbing Code Rules which incorporate the 2003 International Plumbing Code, Michigan Barrier Free Design Requirements, and ADA.
- C. HVAC: Conform to State of Michigan Mechanical Code Rules which incorporate the 2003 Edition of the International Mechanical Code.
- D. All systems shall conform to local, county and city codes and ordinances.
- E. Obtain permits, and inspections from authority having jurisdiction. All costs by Contractor.

#### 1.03 SUBMITTALS

- A. Product Data: Include product description for each product listed under Part 2 of this Section including valves.

### PART 2. PRODUCTS (OR APPROVED EQUAL)

#### 2.01 MOTOR STARTERS

- A. Electrical Contractor shall provide all motor starters required for all mechanical equipment unless noted otherwise. Mechanical Contractor to coordinate location, size, etc., with Electrical Contractor.

#### 2.02 PIPING MATERIALS AND SCHEDULE

- A. Underground sanitary and vent piping and concealed, above

April 6, 2017

ground sanitary, vent and storm piping shall be ASTM A74, service weight hub and spigot cast iron with compression type neoprene gaskets or ASTM D2665 Schedule 40 PVC plastic with solvent weld joints. There is to be no exposed plastic piping, including installations in return plenums.

- B. Above ground sanitary and vent piping not concealed shall be ASTM A74, no hub cast iron with stainless steel bands.
- C. Hot Water Heating Piping: 2" and larger - grooved fittings & off set couplings and high temperature gaskets as manufactured by Victaulic with Schedule 40 grooved black steel or ASTM A53, Schedule 40 black steel with screwed malleable iron fittings or welded joints, ASTM B88 or Type "L" copper with wrought copper fittings and Grade 95TA solder joints or Victaulic "Press-Fit" system; 2" and smaller - Type "L" copper with wrought copper fittings and Grade 95TA solder joints or Victaulic "Press-Fit" system, carbon steel pipe with steel fittings and "O" ring seals.
- D. Domestic cold water and hot water piping shall be ASTM B88, hard temper Type "L" copper with wrought copper fittings and Grade 95TA solder joints.
- E. Water piping underfloor shall be ASTM B88, Type "K" annealed copper, jointless piping.
- F. Gas piping shall be ASTM A53, Schedule #40 black steel with standard malleable iron fittings and welded or screwed joints.
- G. Refrigerant piping shall be Type "ACR" annealed; hard drawn copper with wrought copper fittings and silver brazed joints or pre-charged tubing kit manufactured to ASTM B280 Standards.
- H. Fire protection piping shall be ASTM A53, Schedule #40 black steel with screwed joints or Schedule #10 black steel with welded joints or Victaulic brand rolled grooved joints with gasketed couplings.
- I. Condensate drain piping shall be ASTM B88, hard temper, Type "L" copper with wrought copper fittings and Grade 95TA solder joints. Concealed piping may be schedule 40 PVC plastic with solvent weld joints.

## 2.03 VALVES

- A. Ball Valves:

April 6, 2017

1. Up to 2 Inches: Bronze two-piece body, chrome plated bronze ball, teflon seats and stuffing box ring, lever handle, solder or threaded ends, full port, 150 lb. SWP, 600 psi or Victaulic Series 722 brass body valve.
2. Over 2 Inches: Cast steel body, chrome plated steel ball, teflon seat and stuffing box seals, lever handle, flanged, full port, 150 lb. SWP, 600 psi or Victaulic Series 721 valve with chrome plated ball and stem.

B. Butterfly Valves:

1. Iron body, bronze disc, resilient replaceable seat for service to 180 degrees F, wafer or lug ends, 10 position lever handle or Victaulic Style 300.

C. Swing Check Valves:

1. Up to 2 Inches: Bronze body, bronze swing disc, solder or screwed ends, 150 SP, 300 psi.
2. Over 2 Inches: Iron body, bronze trim, swing disc, renewable disc and seat, flanged ends or Victaulic Series 716 ductile iron body, stainless steel clapper.

D. All valves to be pressure rated.

E. Acceptable: Nibco, Stockham, Watts, Apollo, Jamesbury, Peglers, Lunkenheimer, Keystone or Grinnell or approved equal.

2.04 PIPE HANGERS

- A. Horizontal runs of piping shall be supported on hangers which have provision for vertical adjustment such as turnbuckles, threaded rods with lock nuts.
- B. Vertical runs along walls shall be firmly anchored in position at each floor : supported by base ell, concrete foundation.
- C. Hangers for insulated pipes requiring a vapor barrier shall be installed around outside of insulation. Provide sheet metal jacket to prevent crushing.
- D. Pipe Hanger Spacing:

<u>Pipe Size</u>	<u>Spacing</u>		<u>Cast Iron</u>	<u>Hanger Rod Size</u>
	<u>PVC</u>	<u>Steel</u> <u>Copper</u>		
Up to 1"	-	7'-0"   5'-0"	-	3/8"

April 6, 2017

1-1/4" to 1-1/2"	-	9'-0"	7'-0"	-	dia. 3/8"
2" to 2-1/2"	6'-0"	10'-0"	9'-0"	-	dia. 1/2"
3"	8'-0"	12'-0"	10'-0"	5'-0"	dia. 1/2"
4"	8'-0"	12'-0"	12'-0"	5'-0"	dia. 5/8"

- E. Insert for pipe hangers, equipment supports shall be furnished, installed by Mechanical Contractor. Inserts shall be spaced at intervals as required to comply with pipe spacing schedule. Where inserts are not in suitable locations for proper installation of pipes, provide suitable channels, angles from which to suspend hangers.
- F. All hangers on pipe 3" and larger to be hung from structural panel points.
- G. Acceptable: Unistrut, Grinnell, Superstrut or approved equal.

#### 2.05 EXPANSION OF PIPING

- A. It is contractor's responsibility to erect piping in such manner as to provide for expansion and contraction without harmful strain to building structural members.
- B. All piping at expansion loops shall be adequately anchored, guided with pipe alignment guides.
- C. Acceptable: Keflex, Flexonics, Metalflex or approved equal.

#### 2.06 PRESSURE GAUGES

- A. Pressure gauges will be of the 4-1/2" size with fiberglass reinforced polypropylene case, solid front and blow-out back. Window shall be acrylic plastic and pointer shall be of the micrometer type. Movements shall be brass with bronze bushings, rotary type.
- B. Accuracy shall be plus or minus 1%. The gauge shall be filled with the proper organic liquid corresponding to the ambient temperature requirements. Ranges will be selected so that the operating pressure falls at approximately mid-scale.

April 6, 2017

- c. Acceptable: Trerice 450LFB Series, Marsh or Dwyer. Each gauge will be provided with a 735-2 needle valve, and 872-2 snubber.

#### 2.07 ACCESS PANELS

- A. Provide access panels of sufficient size to make all valves, expansion joints, controls, traps, vents, filters, motors, etc., accessible through construction. Access panels installed in fire-rated surfaces must be "U.L." labeled. Panels to be supplied and located by Mechanical Contractor, installed by General Contractor.
- B. Acceptable: Milcor, Elmdor, Larsen, Karp, or J.L. Industries, or approved equal.

#### 2.08 FIREPROOFING

- A. Fireproofing of pipes and ductwork through fire separation walls, floors and ceilings to be U.L. classified material such as 3M "Fire Barrier" caulk, Rectorseal "Metacaulk", IPC "Flamesafe", Hilti "FS-One", or accepted equivalent.

#### 2.09 VARIABLE FREQUENCY DRIVES

- A. The Variable Frequency Drives (VFDs) shall be solid state, with a Pulse Width Modulated (PWM) output. The VFD package as specified herein shall be enclosed in a NEMA 1 enclosure, completely assembled and tested by the manufacturer. Provide a disconnect switch on the enclosure. The VFD shall employ a full wave rectifier, capacitors, and Insulated Gate Bipolar Transistors (IGBT's) as the output-switching device. The drive efficiency shall be 96% or better at full speed and full load. Displacement power factor shall be no less than 0.98 at all speeds and loads.
- B. Harmonic Distortion Control: The VFD design shall incorporate mechanisms that lower the harmonic currents caused by the drive as compared to standard six-pulse drives onto the AC power line. This design shall be HVAC specific low DC link capacitance. Drives that do not include this design shall include a 5% ac line reactor or DC link choke.
- c. Specifications:
  - 1. Input voltage 208-240, 380-480, 575-600 VAC +/- 10%, 3 phase, 48-63 Hz.
  - 2. Voltage tolerance + or - 10% of specified line voltage.

April 6, 2017

3. Output Frequency 0 to 150 Hz. Operation above 60 Hz shall require programming changes to prevent inadvertent high-speed operation.

D. Standard features:

1. All VFDs shall have the same customer interface, including digital display, and keypad, regardless of horsepower rating. The keypad is to be used for local control, for setting all parameters, and for stepping through the displays and menus. The keypad shall be removable, capable of remote mounting.
2. The keypad shall include Hand, Auto, Stop selections. When in "Hand", the VFD will be started and the speed will be controlled from the up/down arrows. When in "Off", the VFD will be stopped. When in "Auto", the VFD will start via an external contact closure and the VFD speed will be controlled via an external speed reference.
3. The VFD shall have the ability to automatically restart after an overcurrent, overvoltage, under voltage, or loss of input signal protective trip. The number of restart attempts, trial time, and time between reset attempts shall be programmable.
4. The VFD shall have the ability to be programmed to automatically extend the ramp-down time as required to keep the drive from tripping on over-voltage caused by regeneration of power by the load.
5. The customer terminal strip shall be isolated from the line and ground.
6. The drive shall employ current limit circuits to provide trip free operation.
7. The VFD shall be capable of sensing a loss of load (broken belt / no loss of load condition. The drive shall be programmable to signal this condition via a keypad warning, relay output and/or over the serial communications bus.

- E. In the case of a protective trip, the drive shall announce the fault condition on the keypad display:

F. Speed Command Input shall be via any of the following:

1. Keypad
2. Two Analog inputs, each capable of accepting a 0-20mA, 4-20mA, 0-10V, 2-10V signal, and direct NI 1000 temperature sensor input.
3. Serial Communications



April 6, 2017

G. Communications

1. The VFD shall have an RS-485 port, LON (LONMARK) interface and Modbus interface.
2. Serial communication capabilities shall include, but not be limited to, run-stop control; speed set adjustment, proportional/integral/derivative PID control (Set Point) adjustments, and accel/decel time adjustments. The drive shall have the capability of allowing the DDC to monitor feedback such as process variable feedback, output speed/frequency, current (in amps), % torque, power (kW), relay outputs, digital inputs and diagnostic warning and fault information. Additionally, remote (LAN) VFD fault reset shall be possible. A minimum of 15 field parameters shall be capable of being monitored.

H. Installation

1. Installation shall be the responsibility of the mechanical contractor. The contractor shall install the drive in accordance with the recommendations of the VFD manufacturer as outlined in the installation manual.
2. The electrical contractor shall complete power wiring. The contractor shall complete all wiring in accordance with the recommendations of the VFD manufacturer as outlined in the installation manual.

I. Start-Up

1. Certified factory start-up shall be provided for each drive by a factory authorized service center. A certified start-up form shall be filled out for each drive with a copy provided to the owner, and a copy kept on file at the manufacturer.

J. Manufacturers

1. Yaskawa, Reliance, Square-D, and Siemens or approved equal.

PART 3. EXECUTION

3.01 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.

April 6, 2017

- B. Contractor shall furnish and set all sleeves, flashings for his/her division of work required for piping, etc., where passing through floors, walls or roof.
- C. In finished portions of buildings, where pipes pass through walls, partitions or floors, provide chrome plated cast brass adjustable floor or ceiling plates.
- D. Waterproofing of pipes (sleeves) passing through below grade walls by Mechanical Trades.
- E. Fireproofing of pipes (sleeves) through fire separation walls, floors, and ceilings by Mechanical Contractor. Fireproofing material to be installed in accordance with manufacturer's recommendations to maintain U.L. rating of penetrated assembly.
- F. Route piping in orderly manner, plumb and parallel to building structure, and maintain gradient. Install piping to conserve building space, and not interfere with use of space and other work. Group piping whenever practical at common elevations.
- G. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- H. Provide clearance for installation of insulation, and access to valves and fittings.
- I. Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain top of pipe level.

3.02 EQUIPMENT AND PIPE IDENTIFICATION

- A. Label each pipe indicating its respective service with painted stencil. Arrows showing direction of flow shall be installed adjacent to each label.
- B. Apply identification at fifty (50) feet maximum intervals in straight runs, at each wall sleeve, at each direction change, at shut-off valves, and in access panels. Labels shall be installed in accessible areas.
- C. Install plastic tags on stem or handwheel of each main line sectionalizing and branch valve with corrosion resistant metal chain.
- D. Furnish list of all valves and controls giving location and function, normally open or normally closed. Mount list in

April 6, 2017

glazed frame and permanently fasten to mechanical room wall.

- E. Identify equipment with painted stencil or black micarta plates with white engraved lettering after covering and/or finish painting. Include air handling units, exhaust fans, condensing units, VAV boxes, etc.
- F. Stenciling for small equipment such as small fans shall be 1-1/8" high. Stenciling for large equipment such as air conditioning units shall be 2-1/2" high. Label equipment as follows: Air Handling Units AHU-1, AHU-2, etc.; Exhaust Fans EF-1, EF-2, etc.

### 3.03 SEWER EXCAVATION

- A. The bottom of trench excavations for sewer lines: shaped as required to allow six-tenths of the pipe barrel (measured horizontally) to be uniformly bedded in 4" thick fine non-corrosive granular fill furnished and installed by this contractor.
- B. In case the bottom of the excavation is unsuitable for a foundation, it shall be further excavated and prepared as directed for proper pipe supports. In rock, shale, hard clay, etc., the excavation should be carried at least 6" below trench bottom and refilled to grade with sand, gravel or other suitable materials firmly compacted.
- C. All excavated earth not suitable for or not required for backfilling shall be removed from the site and legally disposed of by the Contractor.
- D. Trenches may be pumped or bailed as required to remove any water which may accumulate or be found in the trenches or other excavations made under this contract.

### 3.04 BACKFILL

- A. After the underground piping has been laid, tested and accepted, the trenches shall be backfilled as follows:
  - 1. Initial backfill for all piping, unless otherwise specified herein or shown on plans, shall consist of non-corrosive sand or fine gravel hand placed and tamped in six (6) inch layers to fill completely all spaces under and adjacent to the pipe and to a height of twelve (12) inches above the top of the pipe.
  - 2. Final backfill materials shall consist of bank-run sand

April 6, 2017

and gravel in accordance with architectural specifications for floor fill.

3.05 SUPPORT FOR SEWER PIPE

- A. Where lines pass under footings for walls or columns, or where lower than adjacent footings, the Contractor shall properly backfill the trenches with concrete up to the level of the bottom of the footings.
- B. Where pipes pass through foundation walls, footings, etc., this Contractor shall provide steel pipe sleeves, 2" larger than the drainpipe and set at elevations required to relieve the pipe of all weight of the structure.

3.06 LINES AND GRADES

- A. Contractor shall lay out, establish lines, grades of all underground in accordance with drawings and shall employ a registered surveyor for this work. Verify bench marks with city or county monuments.
- B. Each subcontractor shall lay out his work and be responsible for lines, elevations and measurements required for installation of his work. Location and depth of existing underground utilities shall be confirmed in field before proceeding.

3.07 EQUIPMENT SUSPENSION

- A. All tanks, air handlers and piping 3" or larger to be securely suspended from structural panel points.

END OF SECTION

April 6, 2017

SECTION 15990 - TESTING, ADJUSTING, AND BALANCING

PART 1. GENERAL

1.01 RELATED DOCUMENTS

- A. Attention is directed to Division 0, Bidding and Contract Requirements, and Division 1, General Requirements, which are hereby made a part of this specification.

1.02 SECTION INCLUDES

- A. Testing, adjusting, and balancing of air systems.
- B. Testing, adjusting, and balancing of hydronic systems.
- C. Equipment performance testing.

1.03 SUBMITTALS

- A. Three (3) copies of Ventilation Test Report Sheets shall be submitted. Testing and balance to be accomplished by an independent balance contractor.
- B. Listing of equipment used for balance and certification of accuracy shall be included in balance report.
- C. Test Reports: Submit prior to final acceptance of project and for inclusion in operating and maintenance manuals.

PART 2. PRODUCTS

2.01 NOT USED.

PART 3. EXECUTION

3.01 TEST FOR ACCEPTANCE

- A. Labor and Material: Furnish labor, materials, instruments; bear other cost in connection with all tests.
- B. Notice of Tests: Give written notice in ample time to all concerned of date when tests will be conducted.
- C. Prior Tests: Concealed or insulated work shall remain uncovered until required tests have been completed, but if construction schedule requires it, arrange for prior test on parts of system.

April 6, 2017

- D. Preliminary Test: As soon as conditions permit, conduct preliminary or "turn over" test of certain equipment as directed, to ascertain compliance with specified requirements. Make needed changes, adjustments, replacements as preliminary tests indicate, prior to acceptance tests.
- E. Acceptance Tests: After mechanical work has been completed, contractor shall subject all mechanical systems to acceptance tests under normal operating conditions for period as directed by Architect.
  - 1. Heating and cooling mediums shall circulate freely without noise throughout entire system. There shall be no evidence of leakage, trapping, air binding in system. Adjust circuit setter balance valves and submit report to Architect.
  - 2. All equipment, pumps, fans, motors shall run at their required speed without showing undue vibration, objectionable noise, sparking. No bearing, journal or any part of electric motors shall heat to temperature of more than 40°F. above surrounding air.
  - 3. Balance individual air handling units, adjust dampers, registers, etc., so they deliver air quantities indicated for each outlet, inlet, or as required. Provide to Architect a list showing amount of air each supply, exhaust opening.
  - 4. All plumbing fixtures shall be operated, tested for supply, waste. All valves shall be tested open, closed; shall be free from leakage at packaging.

### 3.02 EXAMINATION AND PREPARATION

- A. Before commencing work, verify that systems are complete and operable. Report any deficiencies or abnormal conditions in mechanical systems which prevent system balance.
- B. Beginning of work means acceptance of existing conditions.
- C. Recorded data shall represent actually measured or observed condition.
- D. Permanently mark settings of valves, dampers, and other adjustment devices. Set and lock memory stops.

### 3.03 INSTALLATION TOLERANCES

- A. Adjust air handling systems to plus or minus 5 percent for

April 6, 2017

supply systems and plus or minus 10 percent for return and exhaust systems from figures indicated.

- B. Adjust hydronic systems to plus or minus 10 percent of design conditions indicated.

#### 3.04 AIR SYSTEM PROCEDURE

- A. Make air quantity measurements in ducts by traverse of entire cross sectional area of duct.
- B. Measure air quantities at air inlets and outlets.
- C. Vary total system air quantities by adjustment of fan speeds. Vary branch air quantities by damper regulation.
- D. Use volume control devices to regulate air quantities only to extent that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers.
- E. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Allow for 50 percent loading of filters.
- F. Adjust automatic outside air, return air, and exhaust air dampers for design conditions.
- G. Where modulating dampers are provided, take measurements and balance at extreme conditions.

#### 3.05 WATER SYSTEM PROCEDURE

END OF SECTION





April 6, 2017

SECTION 16000 - ELECTRICAL GENERAL PROVISIONS

PART 1. GENERAL

1.01 RELATED DOCUMENTS

- A. Applicable provisions of Bidding Requirements, Project Guidelines and General Requirements (Division 1) apply to the work specified in this section.

1.02 DESCRIPTION

A. Work included:

1. This section includes all labor, materials, equipment, tools, supervision, start-up services, and Owner's instructions, including all incidental and related items necessary to complete installation and successfully test, start-up and operate in a practical and efficient manner all electrical work and systems indicated on the drawings and described in each section of Division 16 and conforming with all contract documents.
2. This section defines certain terms used in the specifications and explains the language; abbreviations, format and certain conventions used in the specifications and certain associated contract documents.
3. The following are for clarification and not intended to supersede the definitions in Division 1.

B. Utility Requirements:

1. The contractor shall be responsible for all fees and charges related to installation, modification or relocation of electrical, telephone, cable, television, etc., utility services covered under the scope of this project unless noted otherwise in the plans or specifications.

April 6, 2017

2. If not provided in other areas of the plans or specifications, it shall be the responsibility of the electrical contractor to contact the appropriate utility and include required fees and materials in the bid.

C. Temporary Facilities:

1. Provide temporary electrical facilities in accordance with Division 1.
2. The Electrical Contractor shall provide temporary electrical power consisting of a minimum of 200 amp, 120/240 volt, single phase, three wire. The temporary power shall be metered separately from any of the Owner's existing facilities unless otherwise noted or authorized.
3. The Electrical Contractor shall provide a minimum of one double duplex GFI protected outlet on a dedicated circuit per 12,000 sq. ft. Note: Minimum one double duplex GFI protected outlet per area shown on plans.
4. The Electrical Contractor shall provide one 30 amp NEMA 14-30R, 250 volt outlet centrally located in the construction area.
5. The Electrical Contractor shall provide temporary lighting throughout the building as the roof structure starts to enclose the building, minimum 0.5 watts (incandescent) per square foot initially and 1.0 watt per square foot as areas near completion. Provide minimum one 150-watt incandescent lamp per room regardless of size.
6. All other temporary power and lighting shall be coordinated and paid for by the Trade requiring the additional power.
7. The contractor identified in Division 1 shall pay cost for power consumption.
8. Temporary electrical facilities/equipment installed to support construction shall be installed in

April 6, 2017

accordance with the requirements of the National  
Electrical Code.

D. Site and Contract Document Examination:

1. Submission of a bid proposal is considered to be evidence that the contractor visited the site, examined drawings and specifications of all trades and is fully informed about the entire project and site conditions.
2. The bid indicates the contractor is proficient, experienced and knowledgeable of all standards, codes, ordinances, permits and regulations that affect every trade's completion.
3. The contractor's bid shall take all items noted into consideration with the cost and time required, and include all these costs in the bid proposal.
4. The contractor shall assume all material noted in the drawings and specifications are new unless specifically noted as "existing", "relocated", etc.

E. Responsibility:

1. The contractor shall be responsible for all subcontractors and suppliers and shall include in the bid and apportion all materials, labor and equipment to the several trades involved in accordance with all local customs, rules, regulations, jurisdictional awards, decisions and secure compliance to all parts of the specifications and drawings regardless of sectional inclusion in these specifications.
2. Each electrical subcontractor and sub-subcontractor shall be responsible for all parts applicable to his trade in accordance with the specifications and drawings and for coordinating locations and arrangements of his work with all other relevant specifications, drawings, shop drawings and details.

F. Drawings and Specifications:

April 6, 2017

1. Drawings and specifications are intended to supplement each other and all work specified or indicated on/in either shall be provided.
2. Drawings are diagrammatic and indicate general arrangements of systems and work included in the contract and shall serve only as design drawings and not as working drawings for general layout of various equipment and systems. Drawings do not necessarily indicate every required offset, junction box, pull box, mounting support, access panel, etc., which shall be provided as required.
3. Each subcontractor shall examine all drawings and specifications of the trade and drawings, shop drawings and field layouts of work of all other trades working on the project, including architectural, structural and mechanical. If any discrepancies occur between these various drawings or between these drawings and these specifications, the contractor shall report same to the Architect/Engineer in writing and shall obtain written instructions for changes in construction. Should interferences develop during construction which cannot be avoided, the Architect/Engineer shall decide which work is to be relocated regardless of which was first installed. This work shall be performed at no extra cost to the Owners.
4. Should drawings disagree in themselves or with the specifications, the better quality or greater quantity of work shall be provided.
5. All schedules on the drawings or in the specifications are only for the convenience of the contractor. The contractor shall make his own count and, where fixtures and/or equipment are indicated on the drawings but not in the schedules, the contractor shall provide like equipment and/or fixtures as are indicated for like rooms or used elsewhere on the project.
6. Manufacturer's Model Numbers:

April 6, 2017

- a. Wherever, on the drawings or specifications, that a manufacturer's catalog number of model or type designation is made, it is intended as a general qualification. It shall remain the contractor's responsibility, before the ordering of any material, to determine the proper type or model with arrangement, mounting and accessories applicable for each location on the project.
  - b. Approval of shop drawings by the Architect/-Engineer does not obviate the contractor's responsibility.
7. Drawings shall not be scaled for measurements and shall not serve as shop drawings. Contractor shall coordinate with architectural, mechanical, structural, or other special equipment plans as required.

G. Definitions:

- 1. "Furnish": Supply and deliver to the project site ready for unloading, unpacking, assembly, installation and similar subsequent requirements.
- 2. "Install": Operations at the project site, including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, protection, cleaning and similar requirements.
- 3. "Provide": Furnish and install, complete and ready for the intended use.
- 4. "Minimum Requirements":
  - a. Indicated requirements are minimum acceptable level of quality as recognized in the industry. Actual work must meet or exceed minimum specified tolerances within reasonable limits.
  - b. Refer uncertainties to the Architect/Engineer for decisions before proceeding.
- 5. "Abbreviations and Plural Words":
  - a. Abbreviations, where not defined in the contract documents, will be interpreted to mean the

April 6, 2017

normal construction industry terminology determined by recognized grammatical rules by the Architect/Engineer.

- b. Plural words will be interpreted as singular, and singular words will be interpreted as plural where applicable for the context of the contract documents.
- 6. "Raceway": Conduit, wireway, channels, boxes, fittings, hangers, supports and items necessary or required in connection with and/or relating to raceway to provide a complete installation.
- 7. "Concealed": Embedded in masonry or other construction below floor slabs, installed behind wall finishes, within double partitions or above hung ceilings, in trenches, tunnels or crawlspace.
- 8. "NIC": Items and/or areas shown are "not in contract" when indicated on the drawings (or identified within these specifications) with "NIC". As a result, this contractor shall take no action on those items identified as such.
- 9. "Computer": Typically related to computer systems, voice communications, video/cable television, and data network equipment; also utilized for identification of multi-media equipment.
- 10. "I.A.W.": "In accordance with" whatever requirement, specification, code, etc. indicated in the drawing and/or specification.
- 11. "Color by Architect": Indicates the Project Architect and Owner will select the fixture or device color. Light fixtures shall assume a custom color unless noted otherwise.

H. Substitutions and Changes:

- 1. When a material, method or product is listed, shown or scheduled by trade name or catalog number for a use, it shall be the basis of design. Other "similar" manufacturers may or may not be listed as "acceptable", provided that the specific item is

April 6, 2017

comparable with the basis and intent of the design.

2. Contractors shall base their bid proposals only on those items either:
  - a. Originally named, listed, shown or specified on/in the drawings/ specifications.
  - b. Named, listed and/or shown in an official addendum to the drawings/specifications.
  - c. All other manufacturers or catalog numbers shall be bid as a voluntary alternate only. Any contractor choosing to base the bid proposal on any item and/or system not either originally named or named in an official addendum as "acceptable" does so at own risk and may be required to furnish and install the originally named product and, if applicable, bear all of the costs involved with removing the unauthorized product.
  - d. Submittal of an alternate product does not guarantee approval.
3. Contractor shall be considered liable for all added costs both to self and to others (including costs incurred by the Architect/ Engineer for redesigning or redrawing) resultant from the substitution of products not originally specified.
4. Contractor shall be responsible for: The verification of adequate space (considering dimensions, required clearances, weights and roughing-in requirements) for the installation of any items or systems not originally specified; The timely advising of all other trades; Submitting revised drawing layouts for the approval of the Architect/Engineer and shall not proceed without approval.

#### 1.03 STANDARDS, CODES AND PERMITS

A. General: Compliance with standards, codes and permits shall be in accordance with general and supplemental conditions.

B. Electrical Work: All work installed under Division 16  
ELECTRICAL GENERAL PROVISIONS

16000-7

April 6, 2017

shall comply with the latest published edition of the applicable standards and codes of the following:

ASA	American Standards Association
ANSI	American National Standards Institute
ASTM	American Society for Testing Materials
BOCA	Building Officials and Code Administrators
NEC	National Electrical Code
NECA	National Electrical Contractor's Association
NEMA	National Electrical Manufacturer's Association
NESC	National Electric Safety Code
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Act
UL	Underwriter's Laboratories, Inc.
UBC	Uniform Building Codes

- C. All labor, material and equipment shall comply with all applicable:
1. City, county and state laws, ordinances, codes and regulations.
  2. Michigan and county health department regulations.
  3. Applicable rules and regulations as required by the Authoritive Fire Marshal.
- D. Excess quantities and sizes: Where quantities, sizes or other requirements on drawings or in specifications are in excess of code requirements, drawings or specifications shall govern and the specified item or system shall be furnished and installed.
- E. Conflicts: Where conflicts are discovered to exist between referenced standards or specifications, the more stringent requirements shall govern. No extra compensation for such compliance will be allowed.
- F. Notices and Payments: The electrical contractor shall give all notices, file all drawings, obtain all necessary approvals, obtain all permits, pay all fees, deposits and expenses required for installation of all work under this contract. Within ten (10) days after award of the contract, the contractor shall show proof that such permits have been obtained and appropriate fees paid.



April 6, 2017

G. Inspections and Certificates of Inspection:

1. No work shall be covered or enclosed until work is tested in accordance with applicable codes and regulations and successful test witnessed and approved by authorized inspection authority.
2. Provide for the Architect/Engineer's review evidence that the installation has been inspected and approved by the authorized governmental inspector having jurisdiction over that phase or system of work involved.

H. U.L. Labels: In general, all material used on this project shall be labeled or listed by Underwriter's Laboratories, Inc.

1.04 SUBMITTALS

A. General: Submittals shall be in accordance with Division 1.

B. Shop Drawings:

1. After the schedules of equipment and subcontractors are submitted and approved, submit copies of shop drawings covering all equipment, systems, and materials to be furnished and installed on this project.

Architect	1 copy
Engineer	1 copy
Owner	2 copies
Electrical Contractor	as required

2. Shop drawing submittals shall at the time they are submitted to the Architect/Engineer for approval, include signatures or stamps of contractor (and subcontractor, where applicable) certifying that the submittals have been inspected and have coordinated required space, services and work of other trades for the equipment or system being submitted.

April 6, 2017

3. Submit complete manufacturer's shop drawings of all equipment, accessories and controls, including (but not limited to) weights, dimensions, capacities, construction details, installation and maintenance instructions, wiring diagrams, available finishes, all applicable manufacturer's warranties and all details involving other trades.
  4. General catalog cuts without detailed engineering and installation details will not be accepted.
  5. Submittal sheets containing or showing items not applicable to the specific project must be clearly marked to show the equipment or system being submitted. Sheets not so marked will be returned un-reviewed.
  6. Submittals on items or systems clearly belonging together (such as lighting fixtures) shall be submitted as a booklet or grouping, with each "set" containing components arranged in a logical sequence. The Architect/Engineer will not assemble such booklets but will rather return unsorted submittals un-reviewed. Submittals shall be maximum size of 36" x 24".
  7. Architect/Engineer's approval of shop drawing submittals is a free service to the contractor and shall not be construed a guarantee of compliance with or a relief of the required compliance with the basic responsibilities of the contractor under the contract documents. Approval of submittals shall not be considered an approval for changes in time or cost.
  8. After approval, the contractor shall provide information to all affected trades.
- C. Shop Drawings Required: System submittals shall include equipment description cuts, schematic diagrams and risers of interconnecting wiring, system description as well as detailed material lists.

April 6, 2017

- |                           |                                   |
|---------------------------|-----------------------------------|
| * Panelboards             | * Light Fixtures, Lamps & Ballast |
| * Distribution Panel      | * Switchboards                    |
| * Starters                | * Disconnects                     |
| * Motor Control Centers   | * Timers/Photo-Eye Controls       |
| * Transformer Pads        | * Primary Load Interrupters       |
| * Fire Alarm System       | * Outlet Receptacles              |
| * Light Switches          | * Pilot Light Switches            |
| * Fuse Switch Disconnects | * Wiring Device Floor Plates      |
| * Wire                    | * Conduit/Boxes                   |

- D. Extra Copies of Submittals: Refer to "Final Acceptance, Guarantees and Warranties" later in this section for requirements of extra copies of shop drawings and operating and maintenance information.

1.05 DELIVERY, STORAGE, HANDLING AND PROTECTION

- A. Delivery, storage, handling and protection shall be in accordance with General Requirements (Division 1) and Section 16100, "Electrical Basic Materials and Methods".

1.06 FINAL ACCEPTANCE, GUARANTEES AND WARRANTIES

- A. General: Final acceptance of the systems, guarantees and warranties shall be in accordance with General Conditions (Division 1), this section and other applicable sections.

B. Final Acceptance:

1. Final acceptance of the systems will be made only after final punch list completion and receipt at the Architect/Engineer's office of:
  - a. All guarantees and/or warranties.
  - b. Operating and maintenance instructions.
  - c. Record as-built drawings.
  - d. Certificates of Inspection.
  - e. Test reports.
  - f. Health department approval.
  - g. Required affidavits for State Fire Marshal.

April 6, 2017

C. Guarantees and Warranties:

1. Guarantees shall be in accordance with the applicable specification section and the following:
  - a. All labor, materials and equipment shall be guaranteed by the contractor and/or warranted by the manufacturer for one (1) calendar year after date of final acceptance, except where specific, longer periods are specified. Contractor shall secure such warranties from all suppliers.
  - b. Acceptance data of substantial completion or owner occupancy shall be as determined by Architect/Engineer. See General Requirements, Division 1.
  - c. Make all necessary alterations, repairs, adjustments and replacements during guarantee period as directed by Architect/Engineer to comply with drawings and specifications. Such work shall be at no cost to the Owner.
  - d. Repair or replacements made under guarantee shall bear one (1) year extended guarantee from date of acceptance of repair or replacement.

D. Operating and Maintenance Instructions and Manuals:

1. Submit to the Architect/Engineer operating and maintenance instructions, including the following:
  - a. Periodic maintenance items.
  - b. Seasonal maintenance items.
  - c. Preventative maintenance items.
  - d. List of service agents for all major equipment.
  - e. List of suppliers for replacement/service parts.
2. Provide the service of factory-trained personnel for such period(s) of time as required to instruct and train owner's designated personnel in the operation and maintenance procedures for all major pieces of equipment; i.e., dimming systems, variable speed drives, etc.
3. Provide instructions to owner's personnel on locations of disconnect switches, duct detector, and other partially concealed items, etc.

April 6, 2017

4. Provide an instruction to owner's personnel on the location and function of all control devices, fuses, disconnects, etc.
5. A letter from the installing contractor, certified by the owner, shall be submitted to the Architect/Engineer when all instructions have been given.

E. Operating Personnel and Maintenance:

1. This contractor shall provide operating personnel and required maintenance for building equipment being used during construction, such as for temporary electricity, etc. After all or portions of the equipment or systems have been granted a date of substantial completion, the contractor shall provide operating personnel and maintenance for such equipment or systems.

F. Record Drawings:

1. Provide a clean and neat set of record drawings which shall show all changes including all circuits, all main control devices, all disconnecting means, all buried conduits (with dimensioned references to building lines and grades, etc.). Record drawings shall be recorded daily.
2. Record all elevations and locations prior to concealment.
3. Provide these drawings to the Architect/Engineer for his transmittal to the Owner for their use and permanent record.
4. Extra copies of shop drawing submittals shall be bound together with maintenance manuals and manufacturer's information/warranties in a notebook or similar.

April 6, 2017

- G. Affidavits: The contractor(s) shall submit notarized affidavits as required by the State Fire Marshal regarding the use of approved plastic materials required to complete this work.

1.07 SUPERVISION

- A. This contractor shall have in charge of the work at all times during construction a thoroughly competent field superintendent with long experience in the work to be installed under this contract. Some person who is satisfactory to the Architect/Engineer shall replace any person not deemed capable by the Architect/Engineer immediately, upon the request of the Architect/Engineer. After such person has been assigned, he shall not be withdrawn or reassigned without the consent of the Architect/Engineer.

END OF SECTION

April 6, 2017

SECTION 16040 - ELECTRICAL IDENTIFICATION

PART 1. GENERAL

1.01 SECTION INCLUDES

- A. Nameplates and labels.
- B. Wire and cable markers.
- C. Conduit markers

1.02 RELATED SECTIONS

- A. All drawings and specification sections apply to work in this section. Furnish all items, articles, materials, equipment, operations or methods that are mentioned, listed or scheduled on drawings or are in this specification including all labor, equipment, materials and miscellaneous incidentals necessary and/or required for the completion of this project. The work covered under this section of the specifications is in no way complete within itself but is supplementary to the entire specifications and drawings.

1.03 REGULATORY REQUIREMENTS

- A. NFPA 70, 2014 National Electric Code and Part 8 State of Michigan Electric Code.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and indicated.

PART 2. PRODUCTS

2.01 NAMEPLATES AND LABELS

- A. Nameplates: Engraved three-layer laminated plastic, white letters on colored background attached to all electrical panels, motor starters, disconnect switches, duct detectors, etc. Tags to provide identification (I.E. LP-A, MDP, AHU-1) as well as feeder locations and

April 6, 2017

size.

B. Locations:

1. Each electrical distribution and control equipment enclosure.
2. Communication cabinets.
3. Each starter.
4. Each disconnect.

C. Letter Size:

1. Use 1/4-inch letters for identifying individual equipment and loads.
2. Use 3/8-inch letters for identifying individual equipment and loads.
3. Use 1/2-inch letters for identifying grouped equipment and loads.
4. Use 1-inch letters for identifying primary distribution equipment.

D. See detail on drawings.

2.02 WIRE MARKERS

A. Manufacturers:

1. Brady.
2. Substitutions: Under provisions of Division 1.

B. Description: Tape or tubing type wire markers.

C. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.

D. Legend:

1. Power and Lighting Circuits: Branch circuit or



April 6, 2017

feeder number indicated on drawings.

2. Control Circuits: Control wire numbers.

E. Use color-coded conductors as follows:

1. Branch Circuits:

a. 208/120Volt:	Black	Phase A
	Red	Phase B
	Blue	Phase C
	White	Neutral

2. Feeder Circuits: Black with color identification noted above at both ends and at all junction or pull boxes.

3. Ground:

a. Branch Circuits:	Ground
Green	
b. Feeder Circuit:	Black Identified w/Green

4. Isolated Ground:

a. Branch Circuits:	Green
w/Yellow Striping	
b. Feeders:	Black Identified w/Green & Yellow

NOTE: A clear, concise tabulation of the means of identification of the color-coding of conductors used within the building is to be permanently posted at each branch-circuit panelboard, per NEC 210-4 (d).

## 2.03 CONDUIT MARKERS

A. Manufacturers:

1. Brady.

2. Substitutions: Under provisions of Division 1.

B. Location: Furnish markers for each conduit longer than 10 feet.

April 6, 2017

C. Spacing: 20 feet on center.

D. Color:

1. 208 or 240Volt System: Black
2. Emergency Power Supply: Brown.
3. Telephone System: Orange.
4. Data System: Yellow.
5. Fire Alarm System: Red.

E. Legend:

1. 208 or 240Volt System: Indicate panel being fed.
2. Emergency Power Supply: Emergency Power Supply.
3. Telephone System: Telephone.
4. Data System: Data

## 2.04 UNDERGROUND WARNING TAPE

A. Manufacturers:

1. Griffolyn Company, Inc., ("Terratape")
2. Brady.
3. Substitutions: Under provisions of Division 1.

B. Description: six-inch (6'') wide polyethylene yellow plastic tape, with black letters and suitable warning legend ("CAUTION - CAUTION; BURIED ELECTRICAL LINE BELOW") on a continuous roll.

C. All trenches containing underground cable, (in conduit or direct buried), shall have identifying warning tape installed.

## 2.05 JUNCTION BOX LABELING

A. Label all junction boxes with the branch circuits that

April 6, 2017

enter the boxes.

- B. All junction/pull boxes for isolated ground circuits shall be labeled as "IG" and painted orange.

### PART 3. EXECUTION

#### 3.01 PREPARATION

- A. Degrease and clean surfaces to receive nameplates and labels.

#### 3.02 APPLICATION

- A. Install nameplate and label parallel to equipment lines.
- B. Secure nameplate to equipment front using adhesive.
- C. Secure nameplate to inside surface of door on panelboard that is recessed in finished locations.
- D. Color:
  - 1. 208 Volt System: Black.
  - 2. Fire Alarm System: Red.
  - 3. Telephone System: Black.
- E. Provide buried marker tape identifying communication or power (with voltage) 12 inches above any buried services.

END OF SECTION



April 6, 2017

SECTION 16050 - ELECTRICAL BASIC MATERIALS AND METHODS

PART 1. GENERAL

1.01 RELATED DOCUMENTS

- A. Applicable provisions of Bidding Requirements, Project Guidelines and General Requirements (Division 1) apply to the work specified in this section.

1.02 DESCRIPTION

A. Work included:

1. This section of these specifications is intended to outline the basic construction methods and materials to be used for the installation of all wiring, devices, equipment and accessories required on this project. Also included are such other work and materials that shall be used to meet the requirements of the electrical system(s) for the project.
2. This section is comprised of standards of construction and materials for the Electrical Division of these specifications. All the types of items, materials, methods or systems, etc., hereinafter described are not necessarily part of the work for this project. The contractors shall refer to the Trade Sections of the Electrical Division of these specifications and to the drawings to ascertain which of the systems he is required to provide for this project. Construction methods and materials for special systems, not described in this section, are specified under the Trade Section to which they apply. Where more stringent construction methods are required than imposed by this section, they are specified in the Trade Sections and shall apply.

B. Related Work:

1. Electrical General Provisions, Section 16000. All other sections of Division 16.

1.03 SUBMITTALS

April 6, 2017

A. Submittals: In accordance with Division 1.

1.04 DELIVERY, STORAGE AND HANDLING

A. General: Delivery, storage and handling shall be in accordance with the General and Supplementary General Conditions.

B. Inspection: Inspect all items upon delivery and remove and replace all items impossible to repair so that they are equal and indistinguishable from new items.

C. Protection: Protect electrical materials and products and installation work against dirt, water or mechanical damage before, during and after installation.

D. Repairs: All damage inflicted prior to date of final acceptance shall be repaired or replaced in a manner acceptable to the Architect/Engineer at no cost to the owner by the contractor or subcontractor whose work is involved.

PART 2. PRODUCTS

2.01 STANDARDS

A. General:

1. All electrical material, equipment and accessories installed under this project shall be new and shall conform to all applicable standards, requirements and codes and all applicable local, state and federal specifications.

2. All products shall be of established manufacturers regularly engaged in the making of the type of materials to be provided. All products shall be complete with all parts, accessories, supports, trims, connections, etc., reasonably incidental to the product and necessary for installation.

3. All products shall be properly tested, cleaned, adjusted and put in complete working order ready for service before acceptance will be considered.

April 6, 2017

4. All electrical work shall be installed in a first-class workmanlike manner.
5. Due to the difficulty in showing the exact locations on the drawings of all raceways, offsets, boxes, fittings or accessories, coordinate the installation with all trades and, where conflicts occur, obtain the Architect/Engineer's approval before installation. Failure to do this shall result in rework to meet the Architect/Engineer's approval at no additional cost to the owners or Architect/Engineers.
6. All conductor and raceway sizes shall meet National Electrical Code (NEC) requirements.

PART 3. EXECUTION

3.01 INSPECTION AND PREPARATION

A. General:

1. Perform inspections in accordance with Division 1, "Coordination and Inspections".
2. Prior to starting his work, the Electrical Contractor shall:
  - a. Examine all conditions of all areas in which his work is to be installed.
  - b. Verify all dimensions indicated on the drawings.
  - c. Make all field measurements required for his work.
  - d. Report any and all discrepancies or required corrections, in writing, to the Architect/Engineer, .
3. Do not proceed with the work until acceptable conditions have been provided.
4. The commencement of work by the electrical contractor shall signify the electrical contractor's acceptance of all existing conditions.

April 6, 2017

B. Laying Out of the Work:

1. Layout work and be responsible for lines, elevations and measurements for installation of the work. Construct work in conformity with lines and elevations as indicated on the drawings.
2. Record all data on project record documents set.

3.02 BASIC INSTALLATION METHODS

- A. Equipment Clearance: Coordinate mechanical and electrical equipment locations to ensure that adequate clearance for installation, inspection and required service is provided. Maintain adequate clearance around equipment as required by the National Electrical Code (Article 110) and all applicable state and local codes.
- B. General Supports: Provide all necessary angles, channels, brackets or unistrut supplementary steel as required for adequate support of all raceway, specialties, and equipment which is hung or mounted above the floor. Secure approval, in writing, before welding, bolting, or anchoring to steel framing, or concrete structure from the Architect/Engineer.
- C. Equipment Housekeeping Pad Foundations:
1. Unless specifically stated "By Others", this contractor shall provide concrete housekeeping pad foundations for all floor-mounted equipment whether indicated on the drawings and/or templates and shall locate each pad dimensionally when the pad is provided "By Others".
  2. Equipment pads, (and unless noted otherwise), shall be 3-1/2" high, reinforced with woven wire mesh, level at the top, with each exposed edge chamfered, with dowels into the building floor and required anchor bolts for the equipment designed to rest upon the pad.
    - a. All switchboard locations.
    - b. Pad or floor mounted transformers.



April 6, 2017

C. Gas or Diesel Generators.

d. Uninterruptible Power Supplies or similar equipment.

D. Cutting and Patching:

1. Cutting and patching shall be in accordance with Division 1, Cutting and Patching, and this section.
2. Cutting and patching required by the installing contractor or subcontractor shall be performed by the installer in accordance with the applicable specification section under the direct supervision of the contractor responsible for that section. Patching shall be, in general, to the same standards of finish and appearance as the adjacent undisturbed material. Should it be necessary to achieve this condition, the installer shall employ those specialty workmen as may be required at no additional cost to the Owner.
3. Cutting, patching and repair of electrical work is the responsibility of the Electrical Contractor unless specifically shown on the architectural plans.

E. Access Panels:

1. Items of equipment that require accessibility, adjustment, maintenance or observation such as junction boxes, controls, etc., shall be located and arranged for ready access either directly or through the use of access doors.
2. Notify the Architect/Engineer and all affected trades where and of what size and/or configuration that access doors will be installed. Secure the approval of the Architect/Engineer for these locations and configurations.
3. Such access doors/panels shall meet or exceed the fire barrier rating of the floor, wall or partition into which they are inserted.
4. Access doors or panels, where required, shall be provided by the contractor or subcontractor whose equipment requires the access.

April 6, 2017

F. Excavating and Backfilling:

1. Excavation and backfilling shall be performed in accordance with Division 2, "Earthwork", and this section.
2. Respective trades shall provide trenching, excavating and backfill as required for the installation of their work, including bracing, shoring and dumping as may be required. All provisions shall be made to ensure the safety of persons and property while work is proceeding as well as when the area is unattended.
3. Excavations shall conform to the required burial depth of equipment as designated on the drawings, as required by field conditions and as directed by the Architect/Engineer. Minimum burial depth shall be 36 inches bellow final grade unless noted otherwise.
4. Enclose, support, barricade and mark all excavations as necessary.
5. Exercise caution in excavation and personally check with all utilities (Call "Miss Dig") and the owners for all required information on existing underground work in the area of the excavation. Repair all damage to existing underground work if damage is inflicted in the course of the excavation.
6. All excavations shall be made from the surface utilizing hand or mechanical means. When excavating in sand or fine gravel, mechanical excavation shall stop above the final burial depth; hand excavate from that point to the final depth. When excavating in heavy gravel, rock or clay, mechanical excavation shall continue to a depth at least six (6) inches below the final burial depth. The installation shall then be laid on a bed of clean sand, compacted to the final depth and grade.
7. Where electrical work is to be installed in filled or disturbed earth, brick piers shall support raceways or other approved supports placed under the raceways and carried down to a firm bearing.

April 6, 2017

8. All lines shall be laid straight and true alignment with the grade in the location established on the drawings or as directed by the Architect.
9. Have raceways, cables, and other buried electrical work inspected and tested before backfilling. Exercise particular care to backfill simultaneously on both sides of raceways, manholes, etc. Backfill to a height 6 inches above, sides and bottom of all raceways with 100 percent sand in all exterior instances. The remainder, to grade, may be excavated soil if approved by the Architect/Engineer. Backfill under buildings, sidewalks, drives or parking lots shall be with 100 percent clean, non-cohesive sand. Compaction shall be in accordance with Division 2, Earthwork.
10. Stake out all underground outside services and lines prior to excavation in order to eliminate damage to or removal of trees, landscaping, sidewalks, etc. The drawings indicate only the approximate intent of the location.
11. Provide warning tape above all buried electrical & communications lines in accordance with section 16040.
12. As-built drawings shall clearly indicate exact location (with dimensions) of underground installations by this contract.

G. Protection:

1. Each contractor or subcontractor shall protect his work, fixtures, equipment and materials at all times and be responsible for all damages caused either directly or indirectly by his workmen or by project conditions.
2. All raceway openings shall be kept tightly closed with caps or plugs (not paper or cloth) during installation whenever openings are left unattended.

H. General Cleaning:

1. It shall be the duty of this contractor to keep the

April 6, 2017

premises free of accumulations of surplus material or rubbish caused by his operations and/or the operations of his subcontractors. Combustible rubbish and debris shall be removed immediately. The trades shall remove their rubbish and debris from the project site promptly upon its accumulation; in no event later than the Friday of each week.

2. Upon completion of the installation, the contractor shall thoroughly clean all fixtures, equipment, boxes and raceways.
3. All patching, repairing and painting required of surfaces damaged or allowed to deteriorate in the performance of this work made by this contractor, where directed by the Architect/Engineer, at this contractor's expense.
4. Clean all fixtures, boxes, controls, devices, cabinet interiors, enclosures, and other applicable equipment and accessories free of all foreign material.

3.03 CONCRETE FOR ELECTRICAL WORK

- A. Refer to Division 3, Concrete, for requirements.

3.04 ELECTRICAL WORK CLOSEOUT

- A. Closeout shall be in accordance with Division 1, Contract Closeout, and this section.

- B. Coordination with the mechanical trade:

1. Coordinate closeout operations with the closeout of the mechanical systems and any and all other power consuming equipment.
2. Accurately record all locations of conductors or raceways, which are underground or otherwise, concealed.
3. Test run all electrical equipment in accordance with the test runs of mechanical systems.
4. Clean and lubricate operational equipment.

April 6, 2017

5. Check all fuses and thermal overload units for proper sizing as per load, as determined in the field.
6. Instruct the owner's operating personnel thoroughly in the operation, sequencing, maintenance and safety/-emergency provisions of the electrical systems installed under this contract.
7. Equipment/Panel Identification: See section 16040.
8. All panel indices shall be filled out concisely and clearly typewritten with removable cards. Information required should not simply read "Lights" or "Receptacles", but rather "Lights-Room XXX" or "Receptacles, South Wall, Room XXX".
9. An extra copy of the indices card shall be provided to the Owner for record purposes and submitted with as-built drawings for Engineer's review. Failure to fill out indices and identifications in this manner is a violation of Section 384-13 of the National Electrical Code as well as of these specifications.

END OF SECTION