



RFB NO. 320038

# **CONSTRUCTION DOCUMENTS PROJECT MANUAL**

DANE COUNTY DEPARTMENT OF PUBLIC WORKS,  
HIGHWAY AND TRANSPORTATION

**PUBLIC WORKS ENGINEERING DIVISION**  
1919 ALLIANT ENERGY CENTER WAY  
MADISON, WISCONSIN 53713

**REQUEST FOR BIDS NO. 320038  
DANE COUNTY SHERIFF'S SE PRECINCT  
REMODEL AND ADDITION  
125 VETERANS ROAD  
STOUGHTON, WISCONSIN**

## **VOLUME 1 of 2**

Due Date / Time: **TUESDAY, MARCH 16, 2021 / 2:00 P.M.**

Location: **PUBLIC WORKS OFFICE**

Performance / Payment Bond: **100% OF CONTRACT AMOUNT**

Bid Deposit: **5% OF BID AMOUNT**

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FOR INFORMATION ON THIS REQUEST FOR BIDS, PLEASE CONTACT:

STEVE RICHARDS, PROJECT MANAGER  
TELEPHONE NO.: 608/516-8367  
FAX NO.: 608/267-1533  
E-MAIL: RICHARDS.STEVE@COUNTYOFDANE.COM



SECTION 00 01 07

SEALS PAGE

**ARCHITECT**

I hereby certify that this drawing, specification or report was prepared by me or under my direct supervision and that I am a duly Registered Architect under the laws of the State of Wisconsin.



Architect's Seal  
**Wesley T. Reynolds**  
OPN Architects, Inc.  
301 North Broom Street, Suite 100  
Madison, WI 53703  
Telephone: (608) 819-0260

**CIVIL ENGINEER**

I hereby certify that this drawing, specification or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Wisconsin.



Civil Engineer's Seal  
**Matt Haase**  
JSD Professional Services, Inc.  
161 Horizon Drive, Suite 101  
Verona, WI 53593  
Telephone: (608) 848-5060

**MECHANICAL AND ELECTRICAL ENGINEER**

I hereby certify that this drawing, specification or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Wisconsin.



Mechanical and Electrical Engineer's Seal  
**Kelly Harrer**  
Design Engineers  
437 South Yellowstone Drive, Suite 110  
Madison, WI 53719  
Telephone: (608) 424-8814

**STRUCTURAL ENGINEER**

I hereby certify that this drawing, specification or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Wisconsin.



Structural Engineer's Seal  
**Chad Whittinghill**  
Strategic Structural Design, LLC  
725 Heartland Trail, Suite 203  
Madison, WI 53717  
Telephone: (608) 770-4265

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INVITATION TO BID

**LEGAL NOTICE**

Dane County Dept. of Public Works, Hwy & Transp., 1919 Alliant Energy Center Way, Madison, WI 53713, will receive sealed Bids until:

**2:00 P.M., TUESDAY, MARCH 16, 2021**

**REQUEST FOR BIDS NO. 320038  
DANE COUNTY SHERIFF'S SE PRECINCT  
REMODEL AND ADDITION  
125 VETERANS ROAD  
STOUGHTON, WISCONSIN**

Dane County is inviting Bids for construction services. Project consists of the full renovation of an existing facility, an addition of a garage and site work. Only firms with capabilities, experience & expertise with similar projects should obtain this Request for Bids (RFB) document & submit Bids.

RFB document may be obtained after **2:00 p.m. on February 2, 2021** by downloading it from [bids-pwht.countyofdane.com](https://bids-pwht.countyofdane.com). Please call Steve Richards, Project Mgr., at 608/516-8367, or our office at 608/266-4018, for any questions or additional information.

All Bidders must be qualified as a Best Value Contractor before Bid Due Date / Time. Complete Pre-qualification Application for Contractors at [publicworks.countyofdane.com/bvc](https://publicworks.countyofdane.com/bvc) or obtain one by calling 608/267-0119.

A pre-bid facility tour will be held on February 18, 2021 at 1:00 p.m. at the project site, 125 Veterans Road, Stoughton. Bidders are strongly encouraged to attend this tour. See RFB for mandatory disease transmission prevention practices.

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FEB. 3, 2021 & FEB. 10, 2021 - THE DAILY REPORTER**

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**1. GENERAL**

- A. Before submitting Bid, bidder shall thoroughly examine all Construction Documents. Successful Bidder shall be required to provide all the Work that is shown on Drawings, set forth in Specifications, or reasonably implied as necessary to complete Contract for this project.
- B. Bidder shall visit site to become acquainted with adjacent areas, means of approach to site, conditions of actual site and facilities for delivering, storing, placing, and handling of materials and equipment.
- C. Pre-bid meeting is scheduled on February 18, 2021 at 1:00 p.m. at the project site, 125 Veterans Road, Stoughton. Attendance by all bidders is optional, however bidders and subcontractors are strongly encouraged to attend.
- D. Safe distancing & face masks are required for all tour attendees. Tours may be limited to groups of 10 people; please limit number of attending staff & subcontractors. If necessary, attendees may be divided into smaller groups with multiple tours being conducted. Allow sufficient time if you do not make it in to first tour group. Do not visit the site if you are or have recently been ill.
- E. Failure to visit site or failure to examine any and all Construction Documents will in no way relieve successful Bidder from necessity of furnishing any necessary materials or equipment, or performing any work, that may be required to complete the Work in accordance with

Drawings and Specifications. Neglect of above requirements will not be accepted as reason for delay in the Work or additional compensation.

## **2. DRAWINGS AND SPECIFICATIONS**

- A. Drawings and Specifications that form part of this Contract, as stated in Article 1 of General Conditions of Contract, are enumerated in Table of Contents of these Construction Documents.
- B. Complete sets of Drawings and Specifications for all trades will be available to all Bidders, irrespective of category of work to be bid on, in order that all Bidders may be familiar with work of other trades as they affect their bid.

## **3. INTERPRETATION**

- A. No verbal explanation or instructions will be given in regard to meaning of Drawings or Specifications before Bid Due Date. Bidders shall bring inadequacies, omissions or conflicts to Owner or Architect / Engineer's attention at least ten (10) calendar days before Bid Due Date. Prompt clarification will be available to all bidders by Addendum.
- B. Failure to so request clarification or interpretation of Drawings and Specifications will not relieve successful Bidder of responsibility. Signing of Contract will be considered as implicitly denoting that Contractor has thorough understanding of scope of the Work and comprehension of Construction Documents.
- C. Owner or Architect / Engineer will not be responsible for verbal instructions.

## **4. QUALIFICATIONS OF BIDDER (CONTRACTOR AND SUBCONTRACTOR)**

- A. Before award of Contract can be approved, Owner shall be satisfied that Bidder involved meets following requirements:
  - 1. Has completed at least one (1) project of at least fifty percent (50%) of size or value of Division of work being bid and type of work completed is similar to that being bid. If greater magnitude of experience is deemed necessary, other than size or value of work, such requirements will be described in appropriate section of Specifications.
  - 2. Maintains permanent place of business.
  - 3. Can be bonded for terms of proposed Contract.
  - 4. Contractor and subcontractors shall meet all applicable Best Value Contractor requirements.
- B. County's Public Works Project Manager will make such investigations as are deemed necessary to determine ability of bidder to perform the Work, and bidder shall furnish to County's Public Works Project Manager or designee all such information and data for this purpose as County's Public Works Project Manager may request. Owner reserves right to reject Bid if evidence submitted by, or investigation of, bidder fails to satisfy Owner that bidder is responsible and qualified to carry out obligations of Contract and to complete the Work contemplated therein.

## **5. BID GUARANTEE**

- A. Bank certified check, cashier's check or Bid Bond, payable to County in amount not less than five percent (5%) of maximum bid, shall accompany each Bid as guarantee that if Bid is accepted, Bidder will execute and return proposed Contract and Performance and Payment Bonds within ten (10) business days after being notified of acceptance of Bid. Company issuing bonds must be licensed to do business in Wisconsin.
- B. Any bid, which is not accompanied by bid guarantee, will be considered "No Bid" and will not be read at Bid Due Date.
- C. If successful Bidder so delivers Contract, Certificate of Insurance, and Performance and Payment Bonds, check will be returned to Bidder. In case Bidder fails to deliver such Contract, insurance, and bond, amount of bid guarantee will be forfeited to County as liquidated damages.
- D. All checks tendered as bid guarantee, except those of three (3) lowest qualified, responsible bidders, will be returned to their makers within three (3) business days after Bid Due Date. All such retained checks will be returned immediately upon signing of Contract and Performance and Payment Bonds by successful Bidder.

## **6. WITHDRAWAL OF BIDS**

- A. Bids may be withdrawn by written request received from bidder or authorized representative thereof prior to time fixed for Bid Due Date, without prejudice to right of bidder to file new Bid. Withdrawn Bids will be returned unopened. Negligence on part of bidder in preparing their Bid confers no right for withdrawal of Bid after it has been opened.
- B. No Bid may be withdrawn for period of sixty (60) calendar days after Bid Due Date.
- C. If Bid contains error, omission or mistake, bidder may limit liability to amount of bidder's guarantee by giving written Notice of Intent not to execute Contract to Owner within seventy-two (72) hours of Bid Due Date.

## **7. CONTRACT FORM**

- A. Sample copy of contract that successful Bidder will be required to enter into is included in these Construction Documents and bidders are required to familiarize themselves with all conditions contained therein.

## **8. CONTRACT INTERESTS BY COUNTY PUBLIC OFFICIALS**

- A. In accordance with Wisconsin Statute 946.13, county official may not bid for or enter into any contract involving receipts or disbursements of more than \$15,000.00 in a year, in which they have private pecuniary interest, direct or indirect if at same time they are authorized to take official action with respect to making of this Contract. Any contract entered into in violation of this Statute is void and County incurs no liability thereon. This subsection does not affect application and enforcement of Wisconsin Statute 946.13 by state prosecutors in criminal courts of this state.

## **9. EMERGING SMALL BUSINESS PROVISIONS**

- A. **Emerging Small Business Definition.** For purposes of this section, ESB is defined as:

1. Independent business concern that has been in business minimum of one year;
  2. Business located in State of Wisconsin;
  3. Business comprised of less than twenty-five (25) employees;
  4. Business must not have gross sales in excess of three million dollars (\$3,000,000.00) over past three years; and
  5. Business does not have history of failing to complete projects.
- B. Emerging Small Business (ESB) Involvement.** Bidder shall make good faith effort to award minimum of ten percent (10%) of the Work to ESBs. Bidder shall submit report to Dane County Contract Compliance Specialist within ten (10) business days of Bid Due Date demonstrating such efforts. Good faith efforts means significant contact with ESBs for purposes of soliciting bids from them. Failure to make or demonstrate good faith efforts will be grounds for disqualification.
- C. Emerging Small Business Report.** Emerging Small Business Enterprise Report is to be submitted by Bidder in separate envelope marked "Emerging Small Business Report". This report is due by 2:00 p.m. following specified ten (10) business days after Bid Due Date. Bidder who fails to submit Emerging Small Business Report shall be deemed not responsive.
- D. ESB Goal.** Goal of this project is ten percent (10%) ESB participation. ESB utilizations are shown as percentage of total Bid. If Bidder meets or exceeds specified goal, Bidder is only required to submit Form A - Certification, and Form B - Involvement. Goal shall be met if Bidder qualifies as ESB.
- E. Report Contents.** Following award of Contract, Bidder shall submit copies of executed contracts for all Emerging Small Businesses. Emerging Small Business Report shall consist of these:
1. Form A - Certification;
  2. Form B - Involvement;
  3. Form C - Contacts;
  4. Form D - Certification Statement (if appropriate); and
  5. Supportive documentation (i.e., copies of correspondence, telephone logs, copies of advertisements).
- F. ESB Listing.** Bidders may solicit bids from *Dane County Targeted Business Directory* by going to this website. Do not click as a link; copy & paste address into a web browser.  
<https://equity.countyofdane.com/documents/PDFs/Targeted-Business-Directory.xlsx>
- G. DBE Listing.** Bidders may also solicit bids from *State of Wisconsin DOT Disadvantaged Business Enterprise Unified Certification Program (DBE / UCP) Directory* by going to this website. These are not only transportation-related designers & contractors. Do not click as a link; copy & paste address into a web browser.  
<https://wisconsindot.gov/Documents/doing-bus/civil-rights/dbe/dbe-ucp-directory.xlsx>
- H. ESB Certification.** All contractors, subcontractors and suppliers seeking ESB certification must complete and submit Emerging Small Business Report to Dane County Contract Compliance Program.



I. **Certification Statement.** If ESB firm has not been certified by County as ESB prior to submittal of this Bid, ESB Report cannot be used to fulfill ESB goal for this project unless firm provides “Form D - Certification Statement”. Certification statement must be completed and signed by ESB firm.

J. **Questions.** Questions concerning Emerging Small Business provisions shall be directed to:

[OEI@countyofdane.com](mailto:OEI@countyofdane.com)

or

Dane County Contract Compliance Specialist  
City-County Building, Room 356  
210 Martin Luther King, Jr. Blvd.  
Madison, WI 53703  
608/266-4192

K. **Substituting ESBs.** In event of any significant changes in subcontract arrangements or if need arises to substitute ESBs, Bidder shall report such proposed changes to Contract Compliance Specialist to making any official changes and request authorization to substitute ESB firm. Bidder further agrees to make every possible effort to replace ESB firm with another qualified ESB firm.

L. **Good Faith Efforts.** Good faith efforts can be demonstrated by meeting all of these obligations:

1. Selecting portions of the Work to be performed by ESBs in order to increase likelihood of meeting ESB goal including, where appropriate, breaking down Contract into smaller units to facilitate ESB participation.
2. Advertising in general circulation, trade associations and women / minority focus media concerning subcontracting opportunities.
3. Providing written notices to reasonable number of specific ESBs that their interest in Contract was being solicited in sufficient time to allow ESBs to participate effectively.
4. Following up on initial solicitations of interest by contacting ESBs within five (5) business days prior to Bid Due Date to determine with certainty whether ESB were interested, to allow ESBs to prepare bids.
5. Providing interested ESB with adequate information about Drawings, Specifications and requirements of Contract.
6. Using services of available minority, women and small business organizations and other organizations that provide assistance in recruitment of MBEs / WBEs / ESBs.
7. Negotiating in good faith with interested ESBs, not rejecting ESBs as unqualified without sound reason based on thorough investigation of their capabilities.
8. Submitting required project reports and accompanying documents to County’s Contract Compliance Specialist within twenty-four (24) hours after Bid Due Date.

M. **Appeals Disqualification of Bid.** Bidder who is disqualified may appeal to Public Works & Transportation Committee and Equal Opportunity Commission.

## 10. METHOD OF AWARD - RESERVATIONS

- A. Following will be basis of award of Contract, providing cost does not exceed amount of funds then estimated by County as available to finance Contract(s):
  - 1. Lowest dollar amount submitted by qualified responsible bidder on Base Bid for all work comprising project, combined with such additive Owner accepted alternates.
  - 2. Owner reserves right to reject all bids or any bid, to waive any informality in any bid, and to accept any bid that will best serve interests of County.
  - 3. Unit Prices and Informational Bids will not be considered in establishing low bidder.

## **11. SECURITY FOR PERFORMANCE AND PAYMENTS**

- A. Simultaneous with delivery of signed Contract, Bidder shall be required to furnish Performance and Payment Bonds as specified in Article 29 of General Conditions of Contract, "Contract Security". Surety Company shall be licensed to do business in Wisconsin. Performance and Payment Bonds must be dated same date or subsequent to date of Contract. Performance and Payment Bonds must emulate information in Sample Performance and Payment Bonds in Construction Documents.
- B. Provide certified copy of power of attorney from Surety Company showing that agent who signs Bond has power of attorney to sign for Surety Company. Secretary or Assistant Secretary of company must sign this certification, not attorney-in-fact. Certification must bear same or later date as Bond. Power of Attorney must emulate model power of attorney information detailed in Sample Performance and Payment Bonds.
- C. If Bidder is partnership or joint venture, State certified list, providing names of individuals constituting partnership or joint venture must be furnished. Contract itself may be signed by one partner of partnership, or one partner of each firm comprising joint venture, but Performance and Payment Bonds must be signed by all partners.
- D. If Bidder is corporation, it is necessary that current certified copy of resolution or other official act of directors of corporation be submitted showing that person who signs Contract is authorized to sign contracts for corporation. It is also necessary that corporate seal be affixed to resolution, contract, and performance and payment bonds. If your corporation has no seal, it is required that above documents include statement or notation to effect that corporation has no seal.

## **12. TAXES**

- A. Wisconsin Statute 77.54 (9m) allows building materials that become part of local unit government facilities to be exempt from sales & use tax. Vendors & materials suppliers may not charge Bidders sales & use tax on these purchases. This does not include highways, streets or roads. Any other Sales, Consumer, Use & other similar taxes or fees required by law shall be included in Bid.
- B. In accordance with Wisconsin Statute 71.80(16)(a), successful nonresident bidder, whether incorporated or not, and not otherwise regularly engaged in business in this state, shall file surety bond with State of Wisconsin Department of Revenue payable to Department of Revenue, to guarantee payment of income taxes, required unemployment compensation contributions, sales and use taxes and income taxes withheld from wages of employees, together with any penalties and interest thereon. Amount of bond shall be three percent (3%) of Contract or subcontract price on all contracts of \$50,000 or more.

### **13. SUBMISSION OF BIDS**

- A. All Bids shall be submitted on standard Bid Form bound herein and only Bids that are made on this Bid Form will be considered. Entire Bid Form and other supporting documents, if any, shall be removed or copied from Construction Documents, filled out, and submitted in manner specified hereinafter. Submit completed Bid Bond with Bid as well.
- B. No bids for any subdivision or any sub-classification of the Work, except as indicated, will be accepted. Any conditional Bid, amendment to Bid Form or appended item thereto, or inclusion of any correspondence, written or printed matter, or details of any nature other than that specifically called for, which would alter any essential provision of Construction Documents, or require consideration of unsolicited material or data in determining award of Contract, will disqualify Bid. Telecommunication alterations to Bid will not be accepted.
- C. Bidders must submit single Bid for all the Work.
- D. Bid amounts shall be inserted in words and in figures in spaces provided on Bid Form; in case of conflict, written word amounts will govern.
- E. Addenda issued after Bid Letting shall become part of Construction Documents. Bidders shall acknowledge receipt of such addenda in appropriate space provided on Bid Form. Bid may be rejected if receipt of any particular addendum applicable to award of Contract has not been acknowledged on Bid Form.
- F. Bids shall be signed, placed in envelope, sealed and delivered before due time to place designated in Invitation to Bid, and identified with project name, bid number, location, category of work being bid upon, Bid Due Date, name and address of bidder.
- G. Bidder shall be responsible for sealed Bid being delivered to place designated for Bid Due Date on or before date and time specified. Bids received after time of closing will be rejected and returned to bidder unopened.
- H. Public bid openings are prohibited due to current public health conditions.
- I. Bids dropped off at Public Works' physical address should be placed in the "Public Works Bids & Proposals" box inside the building's front vestibule.
- J. Bid will be opened on listed due date & time & results should be available within 24 hours at [bids-pwht.countyofdane.com](http://bids-pwht.countyofdane.com).
- K. Bid will be considered invalid and will be rejected if bidder has not signed it.
- L. Faxed or emailed Bids will not be accepted.
- M. Bidder's organization shall submit completed with Bid, Fair Labor Practices Certification form, included in these Construction Documents.

### **14. SUBCONTRACTOR LISTING**

- A. Bidders are required to submit Section 00 43 36, Proposed Subcontractors Form listing all subcontractors for this project including committed prices for each subcontractor. Project Manager must receive Form no later than when successful Bidder submits their signed Contract. Failure to submit may delay progress payments.

## **15. ALTERNATE BIDS**

- A. Bidder shall carefully read requests for Alternate Bids, and thoroughly examine Drawings and Specifications to determine extent various changes and conditions will affect Bid.
- B. Space is provided in Bid Form for requested Alternate Bids. Failure to submit bid for any requested Alternate Bids may result in rejection of entire Bid.
- C. Bidder shall state amount to be added / subtracted to Base Bid for providing alternates, including all incidentals, omissions, additions, and adjustments as may be necessary or required by such changes. If there is no difference in price, Bidder shall state, "No Change".
- D. Descriptions of requested Alternate Bids are as set forth in Construction Documents.

## **16. INFORMATIONAL BIDS**

- A. Not Used

## **17. UNIT PRICES**

- A. Provide unit prices where requested on Bid Form. Unit prices will include all costs for materials, labor, insurance, taxes, overhead and profit necessary to perform specified work. Estimated quantities are approximate only. Payment will be based upon actual quantities placed, provided or installed. Failure to provide requested unit prices may result in rejection of entire Bid.
- B. Owner reserves right to accept or reject any unit prices as given in Bid.
- C. Bidder shall refer to Bid Form and applicable specification section to determine basis of unit measure and detailed information related to each unit price item requested.

## **18. COMMENCEMENT AND COMPLETION**

- A. Successful Bidder shall commence work when schedule and weather permit, but no later than stated in Bid Form. Contractor shall pursue the Work regularly and continuously at reasonable rate to insure completion of the Work within time stated in Bid.
- B. Should it be found impossible to complete the Work on or before time specified for completion, written request may be submitted for extension of time setting forth reasons believed to justify granting of such request. Refer to Article 20 of General Conditions of Contract, titled "Time for Completion."

## **19. WORK BY OWNER**

- A. Not Applicable.

## **20. SPECIAL HAZARDS COVERAGE**

- A. Not Applicable.

**FORM A**

**DANE COUNTY  
EMERGING SMALL BUSINESS REPORT - CERTIFICATION**

In accordance with General Conditions of Contract, submit this Emerging Small Business Report within ten (10) days after Bid Due Date.

PROJECT NAME: \_\_\_\_\_

\_\_\_\_\_

BID NO.: \_\_\_\_\_ BID DUE DATE: \_\_\_\_\_

**BIDDER INFORMATION**

COMPANY NAME: \_\_\_\_\_

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

\_\_\_\_\_

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

CONTACT PERSON: \_\_\_\_\_

EMAIL ADDRESS: \_\_\_\_\_

**FORM B**

Page \_\_\_ of \_\_\_

**DANE COUNTY**

(Copy this Form as necessary to provide complete information)

**EMERGING SMALL BUSINESS REPORT - INVOLVEMENT**

COMPANY NAME: \_\_\_\_\_

PROJECT NAME: \_\_\_\_\_

BID NO.: \_\_\_\_\_ BID DUE DATE: \_\_\_\_\_

ESB NAME: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_

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

PHONE NO & EMAIL.: \_\_\_\_\_

Indicate percentage of financial commitment to this ESB: \_\_\_\_\_ % Amount: \$ \_\_\_\_\_

ESB NAME: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_

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

PHONE NO & EMAIL.: \_\_\_\_\_

Indicate percentage of financial commitment to this ESB: \_\_\_\_\_ % Amount: \$ \_\_\_\_\_

**FORM C**

**DANE COUNTY  
EMERGING SMALL BUSINESS REPORT - CONTACTS**

(Copy this Form as necessary to provide complete information)

COMPANY NAME: \_\_\_\_\_

PROJECT NAME: \_\_\_\_\_

BID NO.: \_\_\_\_\_ BID DUE DATE: \_\_\_\_\_

	<u>ESB FIRM NAME CONTACTED</u>	<u>DATE</u>	<u>PERSON CONTACTED</u>	<u>DID ESB BID?</u>	<u>ACC- EPT BID?</u>	<u>REASON FOR REJECTION</u>
1)	_____	_____	_____	_____	_____	_____
2)	_____	_____	_____	_____	_____	_____
3)	_____	_____	_____	_____	_____	_____
4)	_____	_____	_____	_____	_____	_____
5)	_____	_____	_____	_____	_____	_____
6)	_____	_____	_____	_____	_____	_____
7)	_____	_____	_____	_____	_____	_____
8)	_____	_____	_____	_____	_____	_____

**FORM D**

**DANE COUNTY  
EMERGING SMALL BUSINESS REPORT - CERTIFICATION STATEMENT**

I, \_\_\_\_\_, \_\_\_\_\_ of  
Name Title

\_\_\_\_\_ certify to best of my knowledge and  
Company

belief that this business meets Emerging Small Business definition as indicated in Article 9 and  
that information contained in this Emerging Small Business Report is true and correct.

\_\_\_\_\_  
Bidder's Signature

\_\_\_\_\_  
Date



**SECTION 00 31 32**

**GEOTECHNICAL DATA**

**SUBSURFACE DRILLING AND SAMPLING INFORMATION**

**BID NO. 320038**

**PROJECT: DANE COUNTY SHERIFF'S SE PRECINCT REMODEL AND ADDITION**

125 Veterans Road, Stoughton, Wisconsin 53589

**INVESTIGATION DATA**

Subsurface investigations have been made and soil boring report by CGC, Inc. (39 pages) are included following this page. This information was obtained for use in preparing the design; however, Bidders shall draw their own conclusions therefrom. No responsibility for subsoil quality or conditions are assumed by Architect / Engineer or Owner.

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Construction • Geotechnical  
Consulting Engineering/Testing

September 14, 2020  
C20355

Mr. Steve Richards  
Department Public Works, Highway, & Transportation  
1919 Alliant Energy Center Way  
Madison, WI 53713

Re: Geotechnical Exploration Report  
Proposed Building Addition  
Dane County Sherriff Department – Southeast Precinct  
125 Veterans Road, Stoughton, Wisconsin

Dear Mr. Richards:

Construction • Geotechnical Consultants, Inc. (CGC) has completed the subsurface exploration program for the above-referenced project. The purpose of this program was to evaluate the subsurface conditions within the proposed construction area and to provide geotechnical recommendations regarding site preparation, foundation, floor slab and pavement design/construction. A determination of the site class for seismic design is also included, along with a discussion of the on-site stormwater infiltration potential. We are sending you an electronic copy of this report, and we can provide a paper copy upon request.

### **PROJECT AND SITE DESCRIPTION**

We understand that a single-story, slab-on-grade garage addition is planned on the east side of the existing Dane County Human Services Building at 125 Veterans Road in Stoughton, Wisconsin, which we understand will be repurposed as the new Dane County Sherriff's Department Southeast Precinct. A reconfiguration of the parking lot and driveways is also planned on this site, along with new stormwater management areas.

According to a provided topographic site plan (Williamson Surveying & Associates; 1-ft contour lines), existing site grades within the area of the planned building addition slope from the existing building down towards the east, with ground surface elevations ranging between about EL 904 to 898 ft. The area is covered with lawn and scattered trees. The existing building has a full basement, and finish first floor and basement elevations are EL 905.33 and 895.48 ft, respectively.

It is understood that finish floor elevation of the planned garage addition will likely be about 1.5 to 2 ft above the existing finish basement floor elevation, near EL 897 to 897.5 ft. Accordingly, we anticipate that cuts on the order of 1 to 7 ft below existing grades will be required to establish the building pad of the addition. Structural loads are expected to be fairly light. It is understood that, in addition to the new garage, the existing parking lot and drive (from/to Veterans Road) will be reconfigured and extended, and that an emergency egress will be added from the new garage to East

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Main Street/US-51 to the north. Furthermore, two stormwater retention basins are envisioned in northern and southern portions of the site.

### SUBSURFACE CONDITIONS

Subsurface conditions for this study were explored by drilling two Standard Penetration Test (SPT) soil borings (labeled B-1 and B-2) within the building footprint to depths between 15 and 20 ft below current site grades. Planned boring depths were 15 ft, but B-1 was extended deeper due to very loose conditions near the planned termination depth. Two additional building borings (B-3 and B-4) were initially considered by the County, but were omitted due to fairly consistent subsurface conditions encountered in B-1 and B-2. Supplementing the building borings, two borings (labeled B-5 and B-6) were drilled within the existing/planned parking lot to planned depths of 10 ft below current site grades. The soil borings were conducted by Badger State Drilling (under subcontract to CGC) on August 26, 2020 using a truck-mounted CME-55 rotary drill rig equipped with hollow stem augers and an automatic SPT hammer. The specific procedures used for drilling and sampling are described in Appendix A.

In addition to the soil borings, four test pits (labeled TP-1 through TP-4) were performed within the planned stormwater management areas. The stormwater test pits were excavated by Hellenbrand Brothers Excavating and logged/sampled in the field by CGC on August 26, 2020.

The boring and test pit locations were selected by the project team and field-staked by CGC. The boring and test pit locations are shown in plan on the Soil Boring & Test Pit Location Exhibit presented in Appendix B. Ground surface elevations at the boring and test pit locations were estimated by CGC based on the provided topographic site plan (Williamson Surveying & Associates; 1-ft contour lines), and the elevations should therefore be considered approximate.

The subsurface profiles at the boring and test pit locations varied to some degree, but the following strata were typically encountered (in descending order):

- About 2 to 3 in. of **asphalt pavement** on top of about 4 to 9 in. of **base course** in Borings 5 and 6; or
- About 6 to 15 in. of **topsoil** in the remaining borings and the test pits; over
- About 3 to 9.5+ ft of cohesive and relatively fine-grained soils, including medium stiff to hard **lean to silty clay**, medium dense **silt**, and loose **silty to clayey sand**; followed by
- Very loose to very dense **sand and gravel** soils, containing variable amounts of fines and scattered cobbles/boulders, to the maximum depths explored.

As an exception to the above generalized subsurface profile, a surficial layer of *mixed fill* was encountered in Boring 2. The apparent fill was underlain by stiff clay and loose sand/gravel soils to a depth of about 6 ft, which were natural in appearance but were classified as *probable fill* due to their

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position in the profile (i.e. a stiff to hard native clay layer was encountered below the bottom of the probable fill granular soils). Shallow clay and silt layers in Boring 1, as well as Test Pits 1 and 2, were classified as *possible fill* due to somewhat inconsistent composition.

As a further exception, the Pavement Boring B-6 terminated at the planned depth of 10 ft below the ground surface within native clay soils, and no fill or natural granular soils were encountered at this location.

Natural moisture contents in representative native clay samples were determined to range from 9.4% to 26.7%, with moisture contents generally increasing with decreasing sand contents. Based on natural moisture contents, pocket penetrometer readings ( $q_p$ -values; an estimate of the unconfined compressive strength of cohesive soils) and SPT blow counts (N-values), the on-site cohesive and fine-grained soils should generally be considered *slightly compressible*, with *isolated zones of moderate compressibility* where natural moisture contents were at the upper end of the aforementioned range.

Furthermore, representative granular soil samples were taken from the stormwater test pits for the purpose of performing particle size distribution (gradation) tests to aid in their classification. Based on the gradations, with P200 (“fines”) contents between 1.2% and 15.5%, the soils represented by these samples classify as USCS poorly graded to silty gravel and silty sand (GP, GP-GM, GM and SM), and USDA extremely gravelly sand and very to extremely gravelly loamy sand (XGRS, VGRLS and XGRLS). The Particle Size Distribution Test Reports are included in Appendix B.

Groundwater was not encountered in the borings or test pits during or upon the completion of drilling/excavating. Groundwater levels are generally expected to fluctuate with seasonal variations in precipitation, infiltration, evapotranspiration, the level in nearby waterbodies and other factors. A more detailed description of the site soil and groundwater conditions is presented on the Soil Boring and Test Pit Logs attached in Appendix B, as well as the WDSPPS Soil and Site Evaluation – Storm form for the test pits attached in Appendix E.

## DISCUSSION AND RECOMMENDATIONS

Subject to the limitations discussed below and based on the subsurface exploration, it is our opinion that the site is generally suitable for the proposed construction and that the planned garage addition can be supported by a conventional reinforced concrete spread footing foundation system. Our recommendations for site preparation, foundation, floor slab and pavement design/construction, along with our assessment of the site class for seismic design and a discussion of the on-site stormwater infiltration potential, are presented in the following subsections. Additional information regarding the conclusions and recommendations presented in this report is discussed in Appendix C.

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## **1. Site Preparation**

We recommend that topsoil and vegetation be stripped at least 10 ft beyond the proposed construction area, including areas requiring fill beyond the building footprint and pavement limits (if any). The topsoil can be stockpiled on-site and later re-used as fill in landscaped areas. As mentioned earlier, topsoil was generally about 6 to 15 in. thick in the borings and test pits, but variable topsoil thicknesses may be encountered between and beyond boring/test pit locations due to previous grading activities.

After topsoil stripping, subgrades are anticipated to largely consist of stiff to hard clay or loose to medium dense silt soils. As an exception, mixed fill may be encountered below the topsoil in isolated areas, such as near Boring 2. In areas remaining at-grade or requiring fill, we recommend cohesive and fine-grained subgrades be statically recompacted (i.e., without vibration) and subsequently proof-rolled with a piece of heavy rubber-tire construction equipment, such as a loaded tri-axle dump truck, to check for soft/yielding areas. If soft/yielding areas are observed, these soils should be undercut and replaced with granular backfill compacted to at least 95% compaction based on modified Proctor methods (ASTM D1557) in accordance with our Recommended Compacted Fill Specifications presented in Appendix D. Alternatively, 3-in. dense graded base (DGB) that is placed in loose 10-in. lifts and compacted until deflection ceases can also be used to restore grades in undercut areas. Granular subgrades should be thoroughly recompacted with a vibratory smooth-drum roller, and zones that remain loose after recompaction should be undercut and replaced or stabilized as described above. Areas subsequently receiving fill should be checked for their pavement, floor slab and footing support suitability prior to fill placement, as applicable.

Following the development of a firm and stable subgrade, fill placement to establish site, pavement and building grades can proceed, where required. To the extent possible, we recommend using granular soils (i.e., sands/gravels, including the native on-site granular soils if selectively excavated and stockpiled) as structural fill within the building envelope and upper 2 to 3 ft in pavement areas because these soils are relatively easy to place and compact in most weather conditions compared to clay/silt soils. Clay and silt soils excavated on-site are generally not recommended as structural fill because moisture conditioning by discing and drying (aeration) will likely be required to achieve desired compaction levels, which is highly weather-dependent (i.e., dry, warm and windy conditions) and could delay construction progress. In our opinion, clay/silt soils are best used as fill in landscaping or potentially as lower lifts in pavement areas provided the moisture contents can be sufficiently lowered from the natural states to facilitate compaction efforts. We recommend that structural fill be compacted to at least 95% compaction based on modified Proctor methods (ASTM D1557) following Appendix D guidelines. Periodic field density tests should be taken by CGC staff within the fill to document the adequacy of compactive effort.

Cuts on the order of 1 to 7 ft are generally expected to establish the floor slab subgrade for the planned garage addition. We anticipate that excavation sidewalls can generally be sloped back according to OSHA requirements. Granular soils with fairly low fines contents, typically classified

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as OSHA “Type C” soils, are anticipated to control excavation slopes, and slopes of 1.5H:1.0V are expected to be at least temporarily stable. Note that flatter side slopes may be required where perched or seeping water is present that destabilizes the side slopes. *The appropriate excavation side slopes should be determined by a competent person completing the earthwork in accordance with OSHA slope guidelines.* Where adequate sloping is not possible, shoring (earth retention) will likely be required, and earth retention systems should be designed by an appropriately qualified professional engineer.

**2. Foundation Design**

We understand that the finish garage floor elevation is proposed to be established about 1.5 to 2 ft above the existing basement elevation near EL 897 to 897.5 ft, or about 1 to 7 ft below existing site grades. Assuming that perimeter footings of the garage addition will bear at frost depth, with slightly shallower interior footings and footings adjacent to the existing building potentially matching existing foundation grades, we anticipate footing subgrades to consist of stiff to hard native clay or loose to medium dense natural sand/gravel soils.

We recommend the following parameters be used for foundation design:

- Maximum net allowable bearing pressure: 2,000 psf
  
- Minimum foundation widths:
  - Continuous wall footings: 18 in.
  - Column pad footings: 30 in.
  
- Minimum footing depths below finish site grades:
  - Exterior/perimeter footings: 4 ft
  - Interior footings: no minimum requirement

*Where new footings are planned adjacent to existing foundations, the effects of overlapping soil stresses must be considered and the recommended maximum net allowable bearing pressure must not be exceeded.*

Recognizing that subgrade conditions will likely vary across the site, footing subgrades should be checked by a CGC field representative to document that the subgrade soils are suitable for footing support or otherwise advise on corrective measures. We recommend using a smooth-edged backhoe bucket for footing and undercut excavations. Where required, the base of undercut excavations should be widened beyond the footing edges at least 0.5 ft in each direction for each foot of undercut depth for stress distribution purposes. Granular soils exposed at the bottom of footing and undercut excavations should be thoroughly recompact with a large vibratory plate compactor or an excavator-mounted hoe-pack prior to backfilling or formwork/concrete placement to densify soils loosened during the excavation process. Soils potentially susceptible to disturbance from vibratory

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compaction (e.g. cohesive/fine-grained soils or sands with elevated moisture content) should be hand-trimmed. OSHA slope guidelines should be followed if workers need to enter footing excavations. *Special care should be exercised not to undermine the foundations of the existing building.*

Undercutting will be required where clays with  $q_p$ -values of less than 1.0 tsf are encountered at and slightly below the bottom of footings designed for an allowable bearing pressure of 2,000 psf. Similarly, loose or disturbed silt, sand or gravel soils that cannot be recompacted satisfactorily should also be undercut if encountered at and slightly below foundation grades. In order to re-establish footing grade in undercut areas, we recommend using granular backfill compacted to at least 95% compaction based on modified Proctor methods (ASTM D1557), in accordance with the Recommended Compacted Fill Specifications presented in Appendix D. Alternatively, 3-in. DGB that is placed in loose 10-in. lifts and compacted until deflection ceases can also be used to restore grades in undercut areas.

Provided the foundation design/construction recommendations discussed above are followed, we estimate that total and differential settlements should be on the order of 1.0 and 0.5 in., respectively.

### **3. Seismic Site Class**

In our opinion, the average soil properties in the upper 100 ft of the site (based on N-values projected to be between 15 and 50 blows/ft, on average, in the granular soils underlying the site) may be characterized as a stiff soil profile. This characterization would place the site in Site Class D for seismic design according to the International Building Code and ASCE 7.

### **4. Floor Slab Design**

We anticipate that floor slab subgrades of the planned garage addition will consist of medium dense silt or stiff to hard clay soils. Prior to slab construction, the cohesive and fine-grained subgrades should be thoroughly recompacted using static recompaction methods (i.e., without vibration), and should subsequent be proof-rolled to check for soft/yielding areas. Granular floor slab subgrades, if any, should be recompacted with a vibratory smooth-drum roller to densify soils that may become disturbed or loosened during construction activities. Areas of disturbed soil, where soils remain loose after recompaction or where soft/yielding zones observed during proof-rolling should be undercut and replaced with compacted 3-in. DGB or granular fill.

To act as a capillary break below the slab, we recommend including a minimum 4 to 6-in. thick layer of well-graded sand/gravel with less than 5% by weight passing the No. 200 U.S. standard sieve. Note, however, that some structural engineers require a layer of DGB, such as 1¼-in. DGB, rather than sand/gravel below the floor slab to increase the subgrade modulus immediately below the slab. To further reduce the potential for moisture migration through the slab, a plastic vapor barrier can also be utilized. Fill and base layer material below the floor slab should be placed as described in the Site Preparation section of this report. Slabs constructed on a minimum 6-in. thick dense graded base



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layer may be designed utilizing a subgrade modulus of 150 pci, and a subgrade modulus of 100 pci should be used for the design of slabs that are constructed on a sand/gravel layer. The design subgrade moduli are based on a firm or adequately stabilized, recompacted subgrade such that non-yielding conditions are developed. The slab should be structurally separated from the footings with a compressible filler and have construction joints and reinforcement for crack control.

## **5. Pavement Design**

We anticipate that pavement design will be controlled by the existing mixed fill, loose to medium dense silt and stiff to hard clay soils that were generally encountered near existing site grades, and subgrades should be prepared as described in the Site Preparation section of this report, with recompaction/proof-rolling completed prior to base course placement. *Due to the presence of mixed fill in at least some sections of the site, we recommend that the budget include a generous contingency for subgrade undercutting/stabilization in existing, mixed fill, which could potentially include about 12 in. of additional coarse aggregate (e.g., 3-in. DGB) over biaxial geogrid (e.g., Tensar BX Type 1 or equivalent).* The need for undercutting below the pavement section will likely be reduced where site grades are raised at least 2 ft above existing grade with high quality granular fill.

We anticipate that asphalt pavement on this site will primarily be exposed to automobile traffic with less than one 18-kip equivalent single axle load (ESAL) per day. In view of this, we have assumed Traffic Class I following Wisconsin Asphalt Pavement Association (WAPA) recommendations for parking areas and driveways that are mainly used by light passenger vehicles. However, main sections of the driveways are likely to experience heavier traffic loads (e.g., due to garbage trucks). For pavement areas where trucks will routinely travel, we have assumed a traffic load of up to 5 ESALs per day and Traffic Class II according to WAPA. The pavement sections summarized in Table 1 below were selected assuming a Soil Support Value “SSV” of about 4.0 for a firm or adequately stabilized fill, silt or clay subgrade and a design life of 20 years.

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**TABLE 1 – Recommended Pavement Sections**

Material	Thicknesses (in.)		WisDOT Specification <sup>(1)</sup>
	Traffic Class I (Light Duty)	Traffic Class II (Medium Duty)	
Bituminous Upper Layer <sup>(2,3)</sup>	1.5	1.75	Section 460, Table 460-1, 9.5 mm (light duty) or 12.5 mm (medium duty)
Bituminous Lower Layer <sup>(2,3)</sup>	2.0	2.25	Section 460, Table 460-1, 12.5 mm (light duty) or 19.0 mm (medium duty)
Dense Graded Base Course <sup>(2,4)</sup>	8.0	10.0	Sections 301 and 305, 3 in. and 1¼ in.
<b>Total Thickness</b>	<b>11.5</b>	<b>14.0</b>	

Notes:

- 1) Wisconsin DOT *Standard Specifications for Highway and Structure Construction*, latest edition, including supplemental specifications, and *Wisconsin Asphalt Pavement Association 2018 Asphalt Pavement Design Guide*.
- 2) Compaction requirements:
  - Bituminous concrete: Refer to Section 460-3.
  - Base course: Refer to Section 301.3.4.2, Standard Compaction
- 3) Mixture Type LT (or E-0.3) bituminous; refer to Section 460, Table 460-2 of the *Standard Specifications*.
- 4) The upper 4 in. should consist of 1¼-in. DGB; the bottom part of the layer can consist of 3-in. DGB.

The recommended pavement sections assume regular maintenance (crack sealing, etc.) will occur, as needed. Note that if traffic volumes are greater than those assumed, CGC should be allowed to review the recommended pavement sections and adjust them accordingly. Alternative pavement designs may prove acceptable and should be reviewed by CGC. If there is a delay between subgrade preparation and placing the base course, the subgrade should be recompact.

Where concrete pavement may be used, such as in pavement areas subjected to concentrated wheel loads (e.g., dumpster pads), we recommend that the concrete pavement should be at least 6-in. thick,

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be underlain by at least 6 in. of DGB and contain adequate reinforcement for crack control. Concrete slabs underlain by a minimum 6-in. thick dense graded base layer over a firm or stabilized subgrade can be designed utilizing a subgrade modulus of 150 pci.

## 6. Stormwater Infiltration Potential

We understand that stormwater management areas are proposed in northern and southern sections of the site, and Test Pits 1 through 4 were performed in these areas to evaluate the subsurface conditions with regard to their stormwater infiltration potential. The test pit profiles involved shallow layers of generally lower-permeability soil, including silt loam, silty clay loam and gravelly sandy clay loam, which extended to depths of about 5.3 to 6.3 ft in the northern Test Pits 1 and 2, and to approximately 3.8 to 4.3 ft below current site grades in the southern Test Pits 3 and 4. Below these depths, more permeable granular soils, consisting of very to extremely gravelly loamy sand and very to extremely gravelly sand, were encountered to the maximum depths explored at 12 ft below existing ground surface elevations. Provided that the infiltration systems extend through the shallow lower-permeability soils and into the granular layers (or lower-permeability soils are undercut below the bottom of the infiltration systems and replaced with appropriate sandier soils), it is our opinion that some stormwater infiltration will likely be possible on this site. *Variability in the soil conditions should be expected across the site and within the stormwater basins that could result in a wide range of undercut depths to reach soil suitable for the design infiltration rate.*

Note that gradations performed on representative samples obtained from the granular soils encountered in the test pits showed P200 contents between 1.2% and 15.5%. Per NR151, due to the relatively low P200 content of portions of these soils, it may be necessary to include at least a 3-ft soil layer with a minimum of 20% fines or a 5-ft thick layer with a minimum of 10% fines below the bottom of the infiltration systems to act as a filtering layer before the infiltrating stormwater reaches the groundwater table. *The inclusion of a filtering layer with higher fines content could potentially control the infiltration rate of the infiltration system.*

**Infiltration Potential:** The following is a summary of the estimated infiltration rates for the soils encountered in Test Pits 1 through 4, per Table 2 of the WDNR Conservation Practice Standard 1002, *Site Evaluation for Storm Water Infiltration*. The estimated infiltration rates are as follows:

• Silty clay loam (SiCL)	0.04 in./hr
• Gravelly sandy clay loam (GRSCL)	0.11 in./hr
• Silt loam (SiL)	0.13 in./hr
• Fine sandy loam (FSL)	0.50 in./hr
• Very gravelly loamy sand (VGRLS)	1.63 in./hr
• Extremely gravelly loamy sand (XGRLS)	1.63 in./hr
• Very gravelly sand (VGRS)	3.60 in./hr
• Extremely gravelly sand (XGRS)	3.60 in./hr

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Note that the infiltration rates should be considered very approximate since they are merely based on soil texture and do not account for in-place soil density and other factors, which will affect the infiltration rate. We recommend that the soils at and several feet below the bottom of stormwater management systems be checked by a certified soil tester *in conjunction with the basin designer* to document that the soils are appropriate for the design infiltration rate or recommend remedial measures, if necessary. The Wisconsin Department of Safety & Professional Services Soil and Site Evaluation – Storm form for Test Pits 1 through 4 is contained in Appendix E.

**Groundwater:** Groundwater was not encountered in the test pits during or upon the completion of excavating. Similarly, no groundwater was observed in the soil borings that were drilled to depths between 10 and 20 ft below existing grades on this site. However, low-chroma/high-value (gray) matrix color and/or redoximorphic features (redox or mottling) were noted in portions of the shallow clay and silt soils, indicating the level of past saturation from perched water, periodically infiltrating surface water or seasonally elevated groundwater. *Groundwater levels/seasonal high levels and groundwater mounding effects must be carefully considered during the design (i.e., establishing design bottom elevation) since it is a limiting factor for infiltration and may preclude the ability to infiltrate. Adequate separation distance must be maintained per WDNR requirements.*

**Bedrock:** Bedrock was not encountered in the test pits or soil borings performed on this site. The depth of bedrock should be expected to vary across the site.

During construction, appropriate erosion control should be provided to prevent eroded soil from contaminating the stormwater management areas. Where appropriate, the stormwater system design should include pretreatment to remove fine-grained soils (silt/clay) and clogging materials (oils/greases) from stormwater prior to entering the infiltration areas. Additionally, a regular maintenance plan should be developed to remove silt/clay soils and clogging materials that may accumulate in the bottom of the stormwater management areas over time. Failure to adequately control fine-grained soils and clogging materials from entering the infiltration areas or failure to regularly remove fine-grained soils and clogging materials that accumulate at the base of the stormwater infiltration systems will likely cause the stormwater management systems to fail. Additionally, it is important that the soils in the bottom of the infiltration systems do not become compacted during construction or measures are taken to mitigate soils that are compacted during construction. Refer to WDNR Conservation Practice Standards 1002, 1003 and 1004, as well as NR151 for additional information.

Mr. Steve Richards  
Department Public Works, Highway, & Transportation  
September 14, 2020  
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## CONSTRUCTION CONSIDERATIONS

Due to variations in weather, construction methods and other factors, specific construction problems are difficult to predict. Soil related difficulties which could be encountered on the site are discussed below:

- Due to the potentially sensitive nature of some of the on-site soils, we recommend that final site grading activities be completed during dry weather, if possible. Construction traffic should be avoided on prepared subgrades to minimize potential disturbance.
- Contingencies in the project budget for subgrade stabilization with coarse aggregate in pavement and floor slab areas should be increased if the project schedule requires that work proceed during adverse weather conditions.
- Earthwork construction during the late fall through early spring could be complicated as a result of wet weather and freezing temperatures. During cold weather, exposed subgrades should be protected from freezing before and after footing construction. Fill should never be placed while frozen or on frozen ground.
- Excavations extending greater than 4 ft in depth below the existing ground surface should be sloped or braced in accordance with current OSHA standards. *Care must be exercised not to undermine the foundations of the existing building.*
- Groundwater infiltration into footing and undercut excavations is generally not expected. However, water accumulating at the bottom of excavations as a result of precipitation or seepage should be quickly removed, with dewatering means and methods being the contractor's responsibility.

## RECOMMENDED CONSTRUCTION MONITORING

The quality of the foundation, floor slab and pavement subgrades will be largely determined by the level of care exercised during site development. To check that earthwork and foundation construction proceed in accordance with our recommendations, the following operations should be monitored by CGC:

- Topsoil stripping and subgrade proof-rolling/compaction;
- Fill/backfill placement and compaction;
- Foundation excavation/subgrade preparation; and
- Concrete placement.

Mr. Steve Richards  
Department Public Works, Highway, & Transportation  
September 14, 2020  
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\* \* \* \* \*

It has been a pleasure to serve you on this project. If you have any questions or need additional consultation, please contact us.

Sincerely,

**CGC, Inc.**



Tim F. Gassenheimer, EIT, CST  
Staff Engineer



Ryan J. Portman, PE, CST  
Senior Consulting Professional

- Encl: Appendix A - Field Exploration  
Appendix B - Soil Boring & Test Pit Location Exhibit  
Logs of Test Borings (4)  
Logs of Test Pits (4)  
Particle Size Distribution Test Reports (4)  
Log of Test Boring-General Notes  
Unified Soil Classification System  
Appendix C - Document Qualifications  
Appendix D - Recommended Compacted Fill Specifications  
Appendix E - WDSPS Soil and Site Evaluation – Storm Form (4 Test Pits)

**APPENDIX A**

**FIELD EXPLORATION**

## APPENDIX A

### FIELD EXPLORATION

Subsurface conditions for this study were explored by drilling four Standard Penetration Test (SPT) soil borings to depths between 10 and 20 ft below current site grades, which were sampled at 2.5-ft intervals to a depth of 10 ft, and at 5-ft intervals thereafter. The soil samples were obtained in general accordance with specifications for standard penetration testing, ASTM D 1586. The specific procedures used for drilling and sampling are described below.

1. Boring Procedures between Samples

The boring is extended downward, between samples, by a hollow-stem auger.

2. Standard Penetration Test and Split-Barrel Sampling of Soils  
(ASTM Designation: D 1586)

This method consists of driving a 2-inch outside diameter split-barrel sampler using a 140-pound weight falling freely through a distance of 30 inches. The sampler is first seated 6 inches into the material to be sampled and then driven 12 inches. The number of blows required to drive the sampler the final 12 inches is recorded on the log of borings and is known as the Standard Penetration Resistance.

During the field exploration, the driller visually classified the soil and prepared a field log. *Field screening of the soil samples for possible environmental contaminants was not conducted by the driller as these services were not part of CGC's work scope.* Water level observations were made in each boring during and after drilling and are shown at the bottom of each boring log. Upon completion of drilling, the borings were backfilled with bentonite to satisfy WDNR regulations and the soil samples were delivered to our laboratory for visual classification and laboratory testing. The soils were visually classified by a geotechnical engineer using the Unified Soil Classification System (USCS).

In addition to the soil borings, four test pits were excavated within planned stormwater management areas. The excavations were logged (using dual classification per the USCS and USDA classifications systems) and sampled (with the purpose of performing gradations to aid in classification) in the field by CGC and subsequently backfilled with excavation spoils placed in lifts and tamped with the excavator bucket.

The final boring and test pit logs prepared by the engineer, including laboratory test results, along with a Soil Boring & Test Pit Location Exhibit and a description of the Unified Soil Classification System are presented in Appendix B.



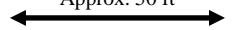
**APPENDIX B**

**SOIL BORING & TEST PIT LOCATION EXHIBIT**  
**LOGS OF TEST BORINGS (4)**  
**LOGS OF TEST PITS (4)**  
**PARTICLE SIZE DISTRIBUTION TEST REPORTS (4)**  
**LOG OF TEST BORING – GENERAL NOTES**  
**UNIFIED SOIL CLASSIFICATION SYSTEM**

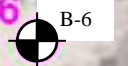
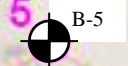
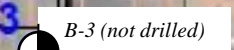
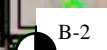
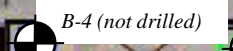
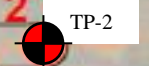
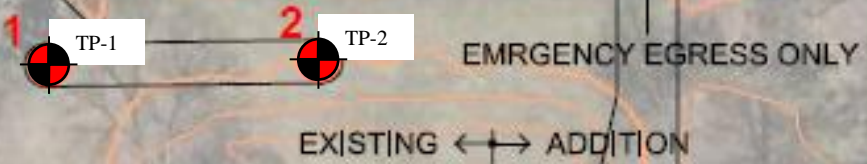
U.S. HWY 51



Graphic Scale:  
Approx. 50 ft



PROPOSED  
STORMWATER  
RETENTION AREA



VETERANS ROAD

**Legend**



Denotes Soil Boring  
Location and Number



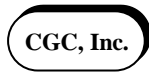
Denotes Test Pit  
Location and Number

**Notes**

1. Borings were drilled by Badger State Drilling on August 26, 2020.
2. Test pits were excavated by Hellenbrand Brothers Excavating and logged in the field by CGC on August 26, 2020.
3. Boring and test pit locations are approximate.
4. Base map was prepared by OPN Architects.

Job No.:  
C20355

Date:  
Sep. 2020



**SOIL BORING & TEST PIT LOCATION EXHIBIT**  
**Proposed Building Addition**  
**Dane Co. Sherriff Dept. – Southeast Precinct**  
**125 Veterans Road, Stoughton, Wisconsin**



# LOG OF TEST BORING

Project Proposed Building Addition  
 Location Dane Co. Sherriff Dept. - Southeast Precinct  
125 Veterans Road, Stoughton, Wisconsin

Boring No. B-1  
 Surface Elevation (ft) 898.5±  
 Job No. C20355  
 Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
					6± in. TOPSOIL (OL; Possible Fill)					
1	14	M	11		Medium Dense, Grayish Brown/Gray (Lightly Mottled) SILT, Trace to Little Sand (ML; Possible Fill)					
2	18	M	15		Hard, Gray/Brown (Mottled) Lean CLAY, Trace to Little Sand, Scattered Roots (CL)	(4.0-4.25)	22.3			
3	18	M	8		Very Stiff/Loose, Brown Sandy Lean CLAY to Clayey Fine to Coarse SAND, Little Gravel (CL/SC)	(2.75-3.25)	9.4			
4	18	M	7		Loose, Tan Fine to Medium SAND, Little to Some Gravel, Trace Silt, Scattered Silt Seams (SP)					
5	18	M	3		Very Loose, Brown Fine to Medium SAND, Little to Some Silt, Trace Gravel (SP-SM/SM)					
6	18	M	16		Medium Dense, Tan Fine to Medium SAND, Little to Some Gravel, Trace Silt (SP)					
					End of Boring at 20 ft					
					Borehole Backfilled with Bentonite Chips					

WATER LEVEL OBSERVATIONS					GENERAL NOTES						
While Drilling	<input checked="" type="checkbox"/>	NW	Upon Completion of Drilling	<input type="checkbox"/>	NW	Start	8/26/20	End	8/26/20		
Time After Drilling						Driller	BSD	Chief	MC	Rig	CME-55
Depth to Water						Logger	GB	Editor	TFG		
Depth to Cave in						Drill Method	2.25" HSA; Autohammer				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



# LOG OF TEST BORING

Project Proposed Building Addition  
 Location Dane Co. Sherriff Dept. - Southeast Precinct  
125 Veterans Road, Stoughton, Wisconsin

Boring No. B-2  
 Surface Elevation (ft) 903.5±  
 Job No. C20355  
 Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
				0	8± in. Topsoil FILL					
1	12	M	17	17	FILL: Hard, Dark Gray Lean to Silty Clay, Trace Sand and Organics, Intermixed with Medium Dense, Brown Silty Fine to Coarse Sand, Little Gravel	(4.5+)				
2	12	M	8	8	Stiff, Brown Lean CLAY, Little Sand, Trace Gravel (CL; Probable Fill)	(1.25-2.0)				
				5	Loose, Tan Gravelly Fine to Coarse SAND, Trace to Little Silt (SP/SP-SM; Probable Fill)					
3	14	M	13	13	Stiff to Hard, Brown/Gray (Lightly Mottled) Lean CLAY, Trace to Little Sand, Trace Gravel (CL)	(3.75-4.5+)	21.8			
4	16	M	14	14	Medium Dense to Very Dense, Tan Gravelly Fine to Coarse SAND, Trace to Little Silt (SP/SP-SM)	(1.0-2.25)	14.7			
				10						
5	18	M	82/9"	14.5	Probable Cobble/Boulders near 14 ft					
				15	End of Boring at 15 ft  Borehole Backfilled with Bentonite Chips					
				20						

WATER LEVEL OBSERVATIONS					GENERAL NOTES				
While Drilling	∇	NW	Upon Completion of Drilling	NW	Start	8/26/20	End	8/26/20	
Time After Drilling					Driller	BSD	Chief	MC	Rig CME-55
Depth to Water				∇	Logger	GB	Editor	TFG	
Depth to Cave in					Drill Method	2.25" HSA; Autohammer			
The stratification lines represent the approximate boundary between soil types and the transition may be gradual.									



# LOG OF TEST BORING

Project Proposed Building Addition  
 Location Dane Co. Sherriff Dept. - Southeast Precinct  
125 Veterans Road, Stoughton, Wisconsin

Boring No. B-5  
 Surface Elevation (ft) 899.0±  
 Job No. C20355  
 Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
				0	3± in. Asphalt Pavement / 9± in. Base Course					
1	18	M	7	7	Stiff to Very Stiff, Brown Lean CLAY, Trace to Little Sand (CL)	(1.5-2.0)	22.6			
2	18	M	12	12		(2.5-3.25)	16.3			
3	18	M	59	59	Very Dense, Tan Gravelly Fine to Coarse SAND, Trace to Little Silt (SP/SP-SM)					
4	18	M	70	70						
End of Boring at 10 ft					Borehole Backfilled with Bentonite Chips and Asphalt Cold Patch					
Borehole Backfilled with Bentonite Chips and Asphalt Cold Patch										

WATER LEVEL OBSERVATIONS					GENERAL NOTES					
While Drilling	∇	NW	Upon Completion of Drilling	NW	Start	8/26/20	End	8/26/20	Driller	BSD Chief MC Rig CME-55
Time After Drilling					Logger	GB	Editor	TFG	Drill Method	2.25" HSA; Autohammer
Depth to Water					The stratification lines represent the approximate boundary between soil types and the transition may be gradual.					
Depth to Cave in										



# LOG OF TEST BORING

Project Proposed Building Addition  
 Location Dane Co. Sherriff Dept. - Southeast Precinct  
125 Veterans Road, Stoughton, Wisconsin

Boring No. B-6  
 Surface Elevation (ft) 899.0±  
 Job No. C20355  
 Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
					2± in. Asphalt Pavement / 4± in. Base Course					
1	18	M	7	7	Stiff, Grayish Brown Lean to Silty CLAY, Trace Sand (CL/CL-ML)	(1.75-2.0)	22.4			
					Very Stiff, Gray/Brown (Mottled) Lean CLAY, Trace Sand (CL)					
2	18	M	8	8		(2.0-2.5)	26.7			
					Stiff, Grayish Brown/Reddish Brown (Mottled) Lean CLAY, Trace Sand (CL)					
3	18	M	6	6		(1.0-1.5)				
					Medium Stiff/Loose, Brown Sandy Lean CLAY to Clayey Fine to Coarse SAND, Little Gravel (CL/SC)	(0.75-1.0)				
4	8	M/W	9	9						
					End of Boring at 10 ft					
					Borehole Backfilled with Bentonite Chips and Asphalt Cold Patch					
				15						
				20						

WATER LEVEL OBSERVATIONS					GENERAL NOTES				
While Drilling	∇	NW	Upon Completion of Drilling	NW	Start	8/26/20	End	8/26/20	
Time After Drilling					Driller	BSD	Chief	MC	Rig CME-55
Depth to Water				∇	Logger	GB	Editor	TFG	
Depth to Cave in					Drill Method	2.25" HSA; Autohammer			
The stratification lines represent the approximate boundary between soil types and the transition may be gradual.									



# LOG OF TEST PIT

Project **Proposed Building Addition**  
 Location **Dane Co. Sherriff Dept. - Southeast Precinct**  
**125 Veterans Road, Stoughton, Wisconsin**

Pit No. **TP-1**  
 Surface Elevation **899.5±**  
 Job No. **C20355**  
 Sheet **1** of **1**

2921 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	DEPTH (ft)	Rec (in.)	Moist	N		qu (qa) (tsf)	W	LL	PL	Probe (in.)
1	0		M		6± in. Grayish Brown Silty TOPSOIL (OL; Possible Fill) USDA: 10YR 5/2 Silt Loam	(4.5+)				
	0		M		Gray/Brown (Lightly Mottled) SILT, Trace to Little Sand (ML; Possible Fill) USDA: 10YR 6/1 (Redox: f2d 10YR 4/3) Silt Loam					
	2		M		Grayish Brown/Light Brown/Gray (Mottled) Lean CLAY, Trace Sand (CL; Possible Fill in Upper 1 to 2 ft of Layer) USDA: 10YR 5/2 (Redox: c2d 10YR 6/4, 6/1) Silty Clay Loam					
	5		M/W		Brown Sandy Lean CLAY to Clayey Fine to Coarse SAND, Little to Some Gravel (CL/SC) USDA: 10YR 5/4 Gravelly Sandy Clay Loam					
	10		M		Light Brown Gravelly Fine to Coarse SAND, Little to Some Silt, Scattered to Numerous Cobbles/Boulders (SP-SM/SM) USDA: 10YR 6/4 Very Gravelly Loamy Sand					
	12				End of Test Pit at 12 ft  Test Pit Backfilled with Excavation Spoils Tamped with Excavator Bucket					

WATER LEVEL OBSERVATIONS					GENERAL NOTES				
While Excavating	<input checked="" type="checkbox"/> NW	Upon Completion of Digging	<input type="checkbox"/> NW		Start	8/26/20	End	8/26/20	
Time After Excavating					Exc.	HBE	Operator	Ben	
Depth to Water					Logger	TFG	Editor	TFG	
Depth to Cave in					Equip. Used:	Takeuchi TB290			

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



## LOG OF TEST PIT

Project Proposed Building Addition  
 Location Dane Co. Sherriff Dept. - Southeast Precinct  
125 Veterans Road, Stoughton, Wisconsin

Pit No. TP-2  
 Surface Elevation 900.0±  
 Job No. C20355  
 Sheet 1 of 1

2921 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe (in.)
1		M		0	9± in. Gray Silty TOPSOIL (OL; Possible Fill) <i>USDA: 10YR 5/1 Silt Loam</i>					
		M		1	Gray/Brown (Mottled) Lean to Silty CLAY, Trace Sand (CL/CL-ML; Possible Fill) <i>USDA: 10YR 6/1 (Redox: c2d 10YR 5/3) Silty Clay Loam</i>	(4.5+)				
		M		2	Brown/Gray (Lightly Mottled) Lean CLAY, Trace Sand (CL) <i>USDA: 10YR 5/3 (Redox: c2f 10YR 6/1) Silty Clay Loam</i>	(2.75-3.5)				
		M/W		3						
		M/W		4						
		M		5						
		M		6	Brown Sandy Lean CLAY to Clayey Fine to Coarse SAND, Little to Some Gravel (CL/SC) <i>USDA: 10YR 5/4 Gravelly Sandy Clay Loam</i>					
		M		7	Light Brown Gravelly Fine to Coarse SAND, Little to Some Silt, Scattered to Numerous Cobbles/Boulders (SP-SM/SM) <i>USDA: 10YR 6/4 Very Gravelly Loamy Sand</i>					
		M		8	Light Brown Sandy Fine to Coarse GRAVEL, Trace Silt, Scattered Cobbles/Boulders (GP) <i>USDA: 10YR 6/4 Extremely Gravelly Sand</i>					
				10	P200 - Sample 1 (10 ft): 1.2%					
				12	End of Test Pit at 12 ft					
					Test Pit Backfilled with Excavation Spoils Tamped with Excavator Bucket					

WATER LEVEL OBSERVATIONS	GENERAL NOTES
While Excavating <u>∇</u> <u>NW</u> Upon Completion of Digging <u>NW</u> Time After Excavating _____ Depth to Water _____ <u>∇</u> Depth to Cave in _____	Start <u>8/26/20</u> End <u>8/26/20</u> Exc. <u>HBE</u> Operator <u>Ben</u> Logger <u>TFG</u> Editor <u>TFG</u> Equip. Used: <u>Takeuchi TB290</u>
The stratification lines represent the approximate boundary between soil types and the transition may be gradual.	





## LOG OF TEST PIT

Project Proposed Building Addition  
 Location Dane Co. Sherriff Dept. - Southeast Precinct  
125 Veterans Road, Stoughton, Wisconsin

Pit No. TP-3  
 Surface Elevation 897.0±  
 Job No. C20355  
 Sheet 1 of 1

2921 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe (in.)
1		M		0	15± in. Gray Silty TOPSOIL (OL) <i>USDA: 10YR 6/1 Silt Loam</i>	(4.0-4.5+)				
		M		1	Gray/Brown (Mottled) Lean CLAY, Trace Sand (CL) <i>USDA: 10YR 6/1 (Redox: c2p 10YR 4/6) Silty Clay Loam</i>					
		M		2	Brown/Gray (Lightly Mottled) Silty Fine SAND, Trace Gravel (SM) <i>USDA: 10YR 4/4 (Redox: c3f 10YR 6/1) Fine Sandy Loam</i>					
		M		3	Brown Sandy Lean CLAY to Clayey Fine to Coarse SAND, Little to Some Gravel (CL/SC) <i>USDA: 10YR 4/3 Gravelly Sandy Clay Loam</i>					
		M		4	Brown Sandy Fine to Coarse GRAVEL, Little to Some Silt, Scattered Cobbles/Boulders (GP-GM/GM) <i>USDA: 10YR 5/3 Very Gravelly Loamy Sand</i> P200 - Sample 1 (7 ft): 15.5 %					
		M		5	Light Brown Gravelly Fine to Coarse SAND, Trace Silt, Scattered Cobbles/Boulders (SP) <i>USDA: 10YR 6/3 Very Gravelly Sand</i>					
				10	End of Test Pit at 12 ft					
					Test Pit Backfilled with Excavation Spoils Tamped with Excavator Bucket					

WATER LEVEL OBSERVATIONS				GENERAL NOTES	
While Excavating	∇	NW	Upon Completion of Digging	NW	Start <u>8/26/20</u> End <u>8/26/20</u>
Time After Excavating					Exc. <u>HBE</u> Operator <u>Ben</u>
Depth to Water				∇	Logger <u>TFG</u> Editor <u>TFG</u>
Depth to Cave in					Equip. Used: <u>Takeuchi TB290</u>
The stratification lines represent the approximate boundary between soil types and the transition may be gradual.					



## LOG OF TEST PIT

Project Proposed Building Addition  
 Location Dane Co. Sherriff Dept. - Southeast Precinct  
125 Veterans Road, Stoughton, Wisconsin

Pit No. **TP-4**  
 Surface Elevation 898.0±  
 Job No. **C20355**  
 Sheet 1 of 1

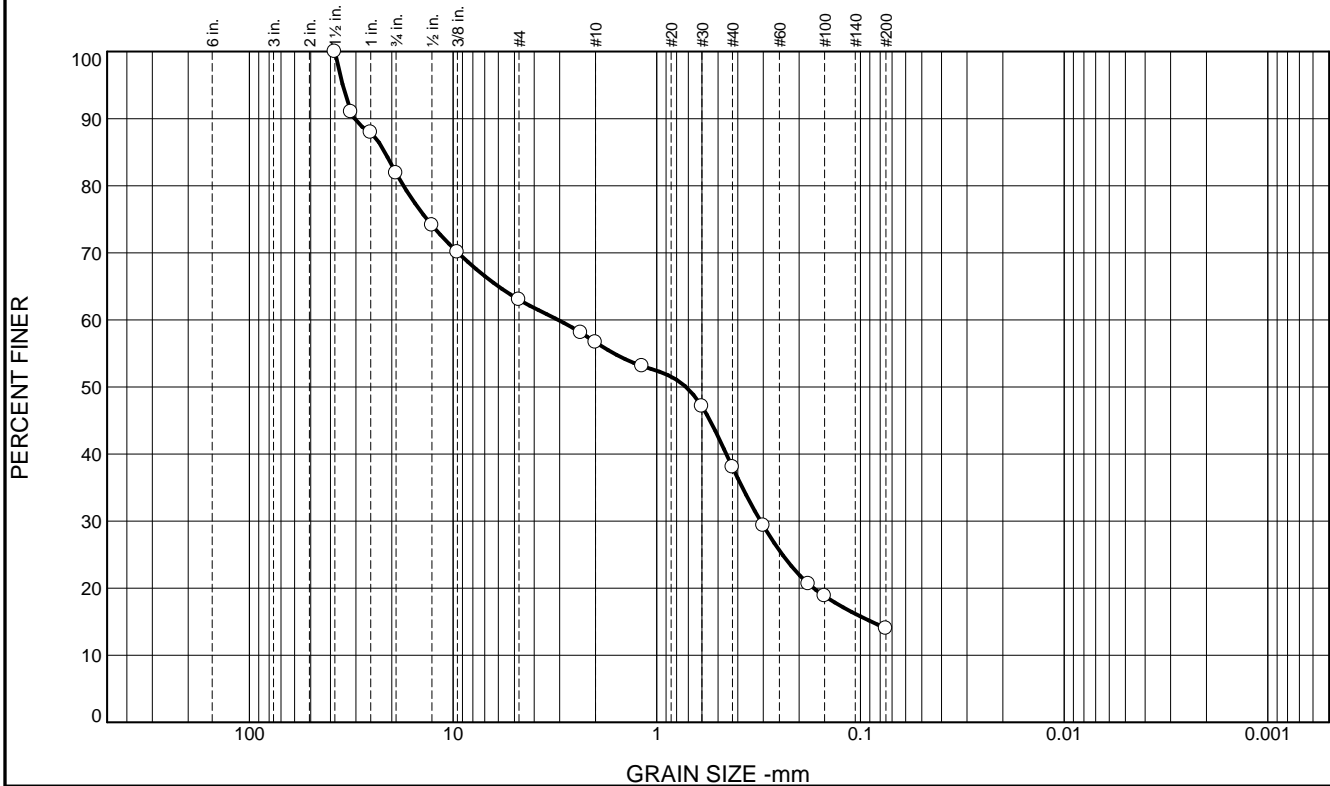
2921 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe (in.)
1		M		0	9± in. Gray Silty TOPSOIL (OL) <i>USDA: 10YR 6/1 Silt Loam</i>	(4.5+)				
		M		1	Brown/Brownish Gray (Lightly Mottled) Lean to Silty CLAY, Little Sand, Trace Gravel (CL/CL-ML) <i>USDA: 10YR 5/4 (Redox: c2f 10YR 6/2) Silty Clay Loam</i>					
		M		5.5	Light Brown Sandy Fine to Coarse GRAVEL, Trace to Little Silt, Scattered Cobbles/Boulders (GP/GP-GM) <i>USDA: 10YR 6/4 Extremely Gravelly Loamy Sand</i>  P200 - Sample 1 (5.5 ft): 6.6%					
					End of Test Pit at 12 ft					
					Test Pit Backfilled with Excavation Spoils Tamped with Excavator Bucket					

WATER LEVEL OBSERVATIONS				GENERAL NOTES				
While Excavating	∇	NW	Upon Completion of Digging	NW	Start	8/26/20	End	8/26/20
Time After Excavating					Exc.	HBE	Operator	Ben
Depth to Water					Logger	TFG	Editor	TFG
Depth to Cave in					Equip. Used:	Takeuchi TB290		

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	18.1	18.9	6.3	18.7	24.0	14.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1.25	91.0		
1	88.0		
3/4	81.9		
1/2	74.1		
3/8	70.1		
#4	63.0		
#8	58.1		
#10	56.7		
#16	53.1		
#30	47.1		
#40	38.0		
#50	29.3		
#80	20.7		
#100	18.8		
#200	14.0		

**Material Description**

Brown Gravelly Fine to Coarse Sand, Some Silt

**Atterberg Limits**

PL=                      LL=                      PI=

**Coefficients**

D<sub>90</sub>= 30.5432      D<sub>85</sub>= 21.6463      D<sub>60</sub>= 3.0504  
D<sub>50</sub>= 0.7188      D<sub>30</sub>= 0.3092      D<sub>15</sub>= 0.0883  
D<sub>10</sub>=                      C<sub>u</sub>=                      C<sub>c</sub>=

**Classification**

USCS= SM                      AASHTO=

**Remarks**

\* (no specification provided)

Sample Number: TP-1: S-1

Date: 8/31/20



Client: Dane County Sheriff  
Project: Dane County Sheriff

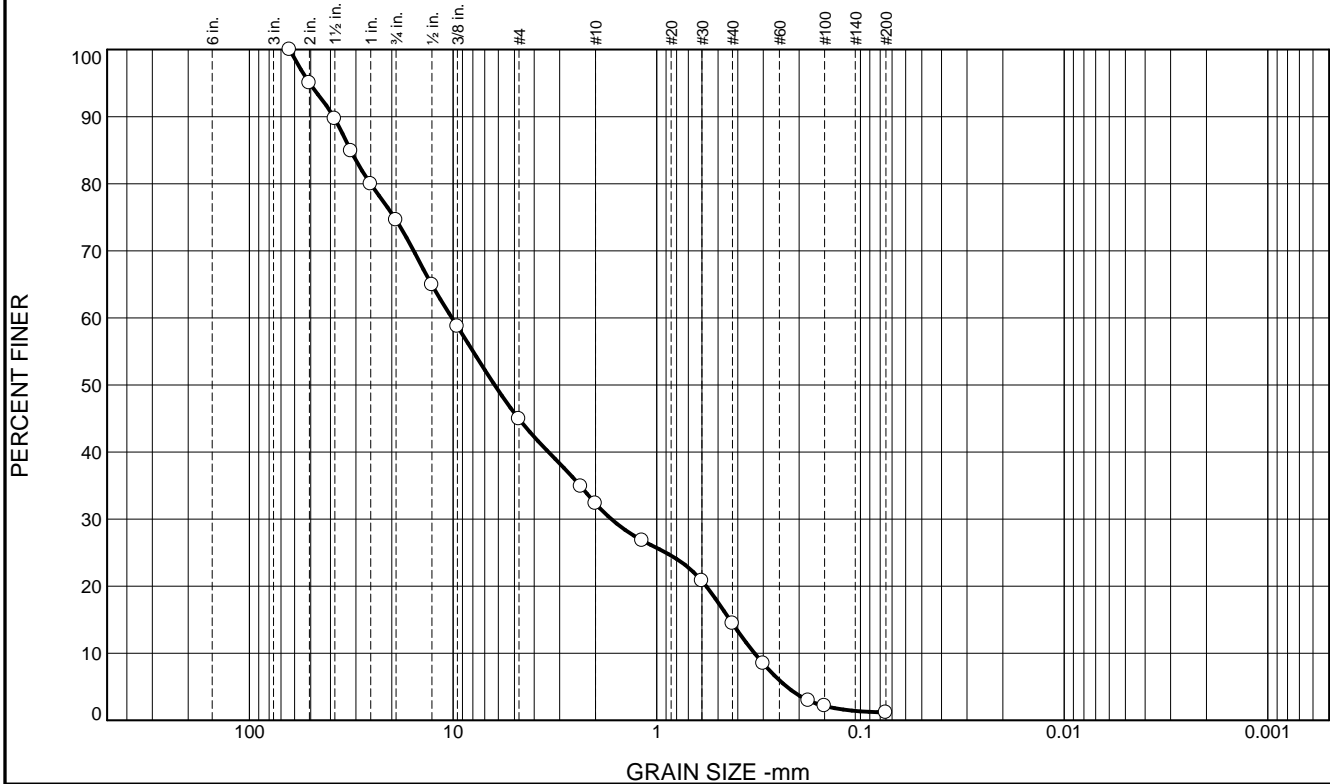
Project No: C20355

Figure

Tested By: DRW

Checked By: TFG

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	25.4	29.7	12.6	17.9	13.2	1.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2	95.0		
1.5	89.7		
1.25	84.9		
1	80.0		
3/4	74.6		
1/2	64.9		
3/8	58.7		
#4	44.9		
#8	34.9		
#10	32.3		
#16	26.8		
#30	20.8		
#40	14.4		
#50	8.5		
#80	2.9		
#100	2.1		
#200	1.2		

**Material Description**

Brown Sandy Fine to Coarse Gravel, Trace Silt

**Atterberg Limits**

PL=                      LL=                      PI=

**Coefficients**

D<sub>90</sub>= 38.6031      D<sub>85</sub>= 31.8961      D<sub>60</sub>= 10.1296  
D<sub>50</sub>= 6.2564      D<sub>30</sub>= 1.6734      D<sub>15</sub>= 0.4378  
D<sub>10</sub>= 0.3311      C<sub>u</sub>= 30.60      C<sub>c</sub>= 0.83

**Classification**

USCS= GP                      AASHTO=

**Remarks**

\* (no specification provided)

Sample Number: TP-2: S-1

Date: 8/31/20



Client: Dane County Sheriff  
Project: Dane County Sheriff

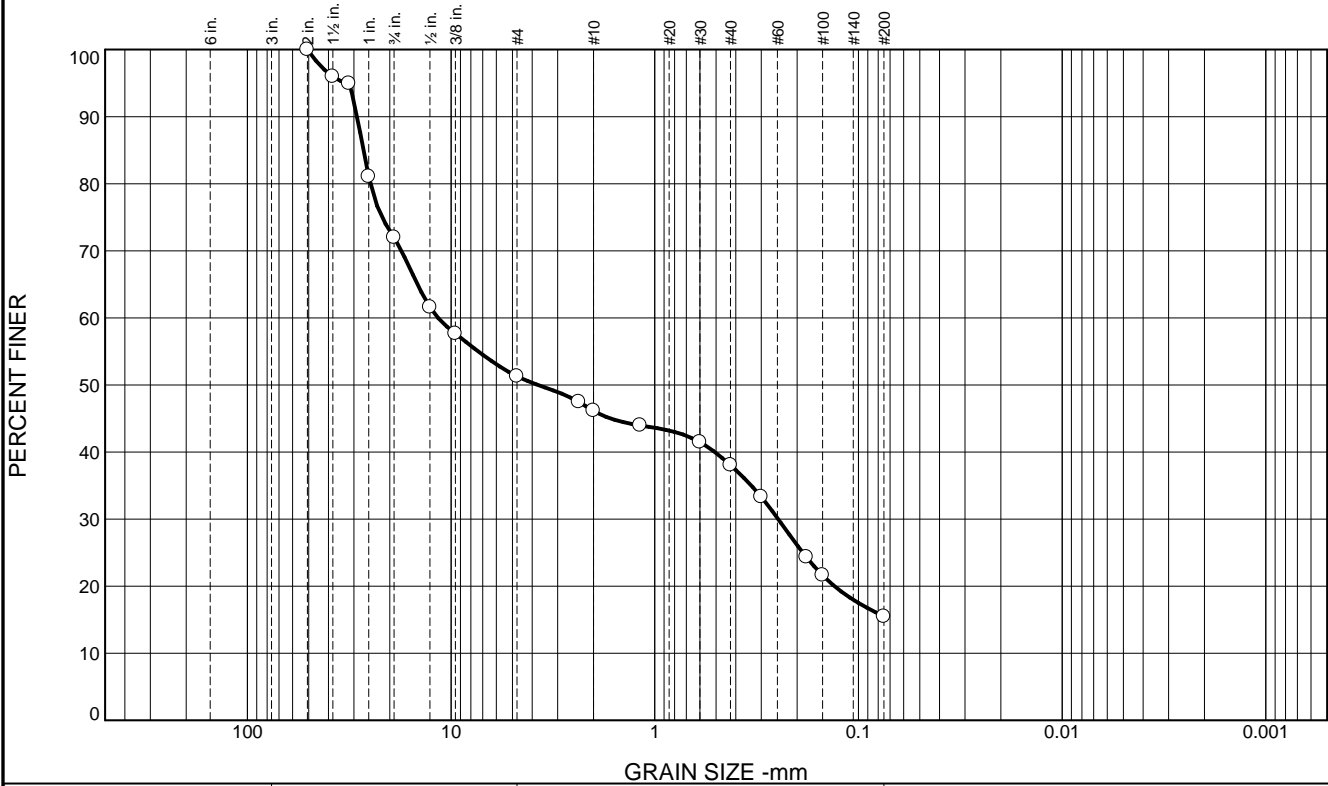
Project No: C20355

Figure

Tested By: DRW

Checked By: TFG

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	28.0	20.7	5.2	8.1	22.5	15.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	96.0		
1.25	94.9		
1	81.0		
3/4	72.0		
1/2	61.6		
3/8	57.7		
#4	51.3		
#8	47.5		
#10	46.1		
#16	44.0		
#30	41.5		
#40	38.0		
#50	33.3		
#80	24.3		
#100	21.6		
#200	15.5		

**Material Description**

Brown Sandy Fine to Coarse Gravel, Some Silt

**Atterberg Limits**

PL=                      LL=                      PI=

**Coefficients**

D<sub>85</sub>= 26.9656                      D<sub>60</sub>= 11.5891

D<sub>50</sub>= 3.7448                      D<sub>30</sub>= 0.2478

D<sub>10</sub>=                      C<sub>u</sub>=                      C<sub>c</sub>=

**Classification**

USCS= GM                      AASHTO=

**Remarks**

\* (no specification provided)

Sample Number: TP-3: S-1

Date: 8/31/20



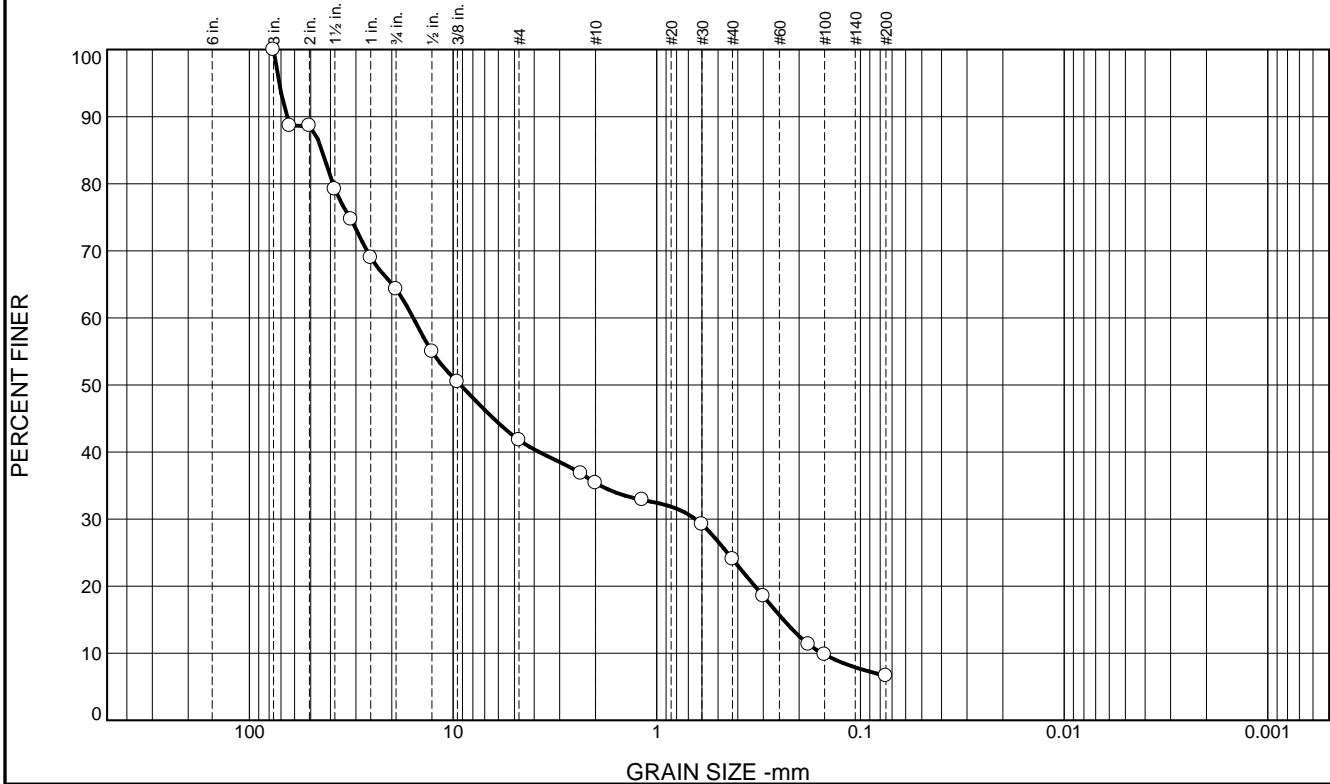
Client: Dane County Sheriff  
 Project: Dane County Sheriff

Project No: C20355

Figure

Tested By: DRW                      Checked By: TFG

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	35.7	22.5	6.4	11.4	17.4	6.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2.5	88.7		
2	88.6		
1.5	79.2		
1.25	74.7		
1	69.0		
3/4	64.3		
1/2	55.0		
3/8	50.5		
#4	41.8		
#8	36.8		
#10	35.4		
#16	32.9		
#30	29.2		
#40	24.0		
#50	18.5		
#80	11.3		
#100	9.8		
#200	6.6		

**Material Description**

Brown Sandy Fine to Coarse Gravel, Little Silt

**Atterberg Limits**

PL=                      LL=                      PI=

**Coefficients**

D<sub>90</sub>= 65.8232      D<sub>85</sub>= 44.1187      D<sub>60</sub>= 15.7079  
D<sub>50</sub>= 9.2004      D<sub>30</sub>= 0.6457      D<sub>15</sub>= 0.2391  
D<sub>10</sub>= 0.1542      C<sub>u</sub>= 101.86      C<sub>c</sub>= 0.17

**Classification**

USCS= GP-GM                      AASHTO=

**Remarks**

\* (no specification provided)

Sample Number: TP-4: S-1

Date: 8/31/20



Client: Dane County Sheriff  
Project: Dane County Sheriff

Project No: C20355

Figure

Tested By: DRW

Checked By: TFG

**LOG OF TEST BORING**  
*General Notes*

**DESCRIPTIVE SOIL CLASSIFICATION**

Grain Size Terminology

Soil Fraction	Particle Size	U.S. Standard Sieve Size
Boulders .....	Larger than 12" .....	Larger than 12"
Cobbles .....	3" to 12" .....	3" to 12"
Gravel: Coarse.....	¾" to 3" .....	¾" to 3"
Fine .....	4.76 mm to ¾" .....	#4 to ¾"
Sand: Coarse.....	2.00 mm to 4.76 mm.....	#10 to #4
Medium .....	0.42 to mm to 2.00 mm .....	#40 to #10
Fine .....	0.074 mm to 0.42 mm.....	#200 to #40
Silt.....	0.005 mm to 0.074 mm.....	Smaller than #200
Clay.....	Smaller than 0.005 mm.....	Smaller than #200

Plasticity characteristics differentiate between silt and clay.

General Terminology

**Physical Characteristics**  
 Color, moisture, grain shape, fineness, etc.  
**Major Constituents**  
 Clay, silt, sand, gravel  
**Structure**  
 Laminated, varved, fibrous, stratified, cemented, fissured, etc.  
**Geologic Origin**  
 Glacial, alluvial, eolian, residual, etc.

Relative Density

Term            "N" Value  
 Very Loose..... . 0 - 4  
 Loose..... 4 - 10  
 Medium Dense.....10 - 30  
 Dense.....30 - 50  
 Very Dense.....Over 50

Relative Proportions Of Cohesionless Soils

Proportional Term	Defining Range by Percentage of Weight
Trace.....	0% - 5%
Little.....	5% - 12%
Some.....	12% - 35%
And .....	35% - 50%

Consistency

Term	q <sub>u</sub> -tons/sq. ft
Very Soft.....	0.0 to 0.25
Soft.....	0.25 to 0.50
Medium.....	0.50 to 1.0
Stiff.....	1.0 to 2.0
Very Stiff.....	2.0 to 4.0
Hard.....	Over 4.0

Organic Content by Combustion Method

Soil Description	Loss on Ignition
Non Organic.....	Less than 4%
Organic Silt/Clay.....	4 - 12%
Sedimentary Peat.....	12% - 50%
Fibrous and Woody Peat...	More than 50%

Plasticity

Term	Plastic Index
None to Slight.....	0 - 4
Slight.....	5 - 7
Medium.....	8 - 22
High to Very High ..	Over 22

The penetration resistance, N, is the summation of the number of blows required to effect two successive 6" penetrations of the 2" split-barrel sampler. The sampler is driven with a 140 lb. weight falling 30" and is seated to a depth of 6" before commencing the standard penetration test.

**SYMBOLS**

Drilling and Sampling

- CS – Continuous Sampling
- RC – Rock Coring: Size AW, BW, NW, 2"W
- RQD – Rock Quality Designation
- RB – Rock Bit/Roller Bit
- FT – Fish Tail
- DC – Drove Casing
- C – Casing: Size 2 ½", NW, 4", HW
- CW – Clear Water
- DM – Drilling Mud
- HSA – Hollow Stem Auger
- FA – Flight Auger
- HA – Hand Auger
- COA – Clean-Out Auger
- SS - 2" Dia. Split-Barrel Sample
- 2ST – 2" Dia. Thin-Walled Tube Sample
- 3ST – 3" Dia. Thin-Walled Tube Sample
- PT – 3" Dia. Piston Tube Sample
- AS – Auger Sample
- WS – Wash Sample
- PTS – Peat Sample
- PS – Pitcher Sample
- NR – No Recovery
- S – Sounding
- PMT – Borehole Pressuremeter Test
- VS – Vane Shear Test
- WPT – Water Pressure Test

Laboratory Tests

- q<sub>a</sub> – Penetrometer Reading, tons/sq ft
- q<sub>a</sub> – Unconfined Strength, tons/sq ft
- W – Moisture Content, %
- LL – Liquid Limit, %
- PL – Plastic Limit, %
- SL – Shrinkage Limit, %
- LI – Loss on Ignition
- D – Dry Unit Weight, lbs/cu ft
- pH – Measure of Soil Alkalinity or Acidity
- FS – Free Swell, %

Water Level Measurement

- ▽ - Water Level at Time Shown
- NW – No Water Encountered
- WD – While Drilling
- BCR – Before Casing Removal
- ACR – After Casing Removal
- CW – Cave and Wet
- CM – Caved and Moist

Note: Water level measurements shown on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils.

# CGC, Inc.

Madison - Milwaukee

# Unified Soil Classification System

## UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

### COARSE-GRAINED SOILS

(more than 50% of material is larger than No. 200 sieve size)

#### Clean Gravels (Less than 5% fines)



GW

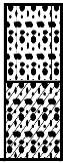
Well-graded gravels, gravel-sand mixtures, little or no fines



GP

Poorly-graded gravels, gravel-sand mixtures, little or no fines

#### Gravels with fines (More than 12% fines)



GM

Silty gravels, gravel-sand-silt mixtures



GC

Clayey gravels, gravel-sand-clay mixtures

**GRAVELS**  
More than 50% of coarse fraction larger than No. 4 sieve size

#### Clean Sands (Less than 5% fines)



SW

Well-graded sands, gravelly sands, little or no fines



SP

Poorly graded sands, gravelly sands, little or no fines

#### Sands with fines (More than 12% fines)



SM

Silty sands, sand-silt mixtures



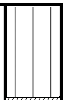
SC

Clayey sands, sand-clay mixtures

**SANDS**  
50% or more of coarse fraction smaller than No. 4 sieve size

### FINE-GRAINED SOILS

(50% or more of material is smaller than No. 200 sieve size.)



ML

Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity



CL

Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays



OL

Organic silts and organic silty clays of low plasticity



MH

Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts



CH

Inorganic clays of high plasticity, fat clays



OH

Organic clays of medium to high plasticity, organic silts



PT

Peat and other highly organic soils

**SILTS AND CLAYS**  
Liquid limit less than 50%

**SILTS AND CLAYS**  
Liquid limit 50% or greater

**HIGHLY ORGANIC SOILS**

## LABORATORY CLASSIFICATION CRITERIA

GW  $C_u = \frac{D_{60}}{D_{10}}$  greater than 4;  $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$  between 1 and 3

GP Not meeting all gradation requirements for GW

GM Atterberg limits below "A" line or P.I. less than 4

GC Atterberg limits above "A" line or P.I. greater than 7

Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols

SW  $C_u = \frac{D_{60}}{D_{10}}$  greater than 4;  $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$  between 1 and 3

SP Not meeting all gradation requirements for GW

SM Atterberg limits below "A" line or P.I. less than 4

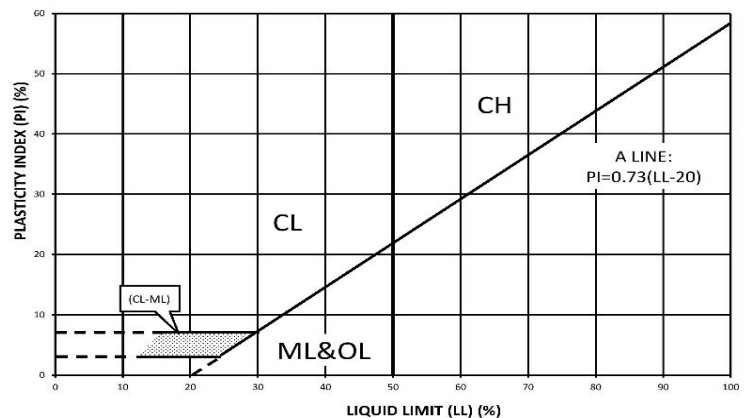
SC Atterberg limits above "A" line with P.I. greater than 7

Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent ..... GW, GP, SW, SP  
More than 12 percent ..... GM, GC, SM, SC  
5 to 12 percent ..... Borderline cases requiring dual symbols

## PLASTICITY CHART





**APPENDIX C**

**DOCUMENT QUALIFICATIONS**

# APPENDIX C

## DOCUMENT QUALIFICATIONS

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### I. GENERAL RECOMMENDATIONS/LIMITATIONS

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CGC, Inc. should be provided the opportunity for a general review of the final design and specifications to confirm that earthwork and foundation requirements have been properly interpreted in the design and specifications. CGC should be retained to provide soil engineering services during excavation and subgrade preparation. This will allow us to observe that construction proceeds in compliance with the design concepts, specifications and recommendations, and also will allow design changes to be made in the event that subsurface conditions differ from those anticipated prior to the start of construction. CGC does not assume responsibility for compliance with the recommendations in this report unless we are retained to provide construction testing and observation services.

This report has been prepared in accordance with generally accepted soil and foundation engineering practices and no other warranties are expressed or implied. The opinions and recommendations submitted in this report are based on interpretation of the subsurface information revealed by the test borings indicated on the location plan. The report does not reflect potential variations in subsurface conditions between or beyond these borings. Therefore, variations in soil conditions can be expected between the boring locations and fluctuations of groundwater levels may occur with time. The nature and extent of the variations may not become evident until construction.

---

### II. IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT

---

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes. While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. *No one except you* should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one - not even you* - should apply the report for any purpose or project except the one originally contemplated.

#### READ THE FULL REPORT

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

#### A GEOTECHNICAL ENGINEERING REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, *do not rely on a geotechnical engineering report* that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes - even minor ones - and request an assessment of their impact. *CGC cannot accept responsibility or liability for problems that occur because our reports do not consider developments of which we were not informed.*

#### SUBSURFACE CONDITIONS CAN CHANGE

A geotechnical engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

#### MOST GEOTECHNICAL FINDINGS ARE PROFESSIONAL OPINION

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgement to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ - sometimes significantly - from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most

effective method of managing the risks associated with unanticipated conditions.

#### **A REPORT'S RECOMMENDATIONS ARE NOT FINAL**

Do not over-rely on the confirmation-dependent recommendations included in your report. *Those confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgement and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *CGC cannot assume responsibility or liability for the report's confirmation-dependent recommendations if we do not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

#### **A GEOTECHNICAL ENGINEERING REPORT IS SUBJECT TO MISINTERPRETATION**

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical engineering report. Confront that risk by having CGC participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

#### **DO NOT REDRAW THE ENGINEER'S LOGS**

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

#### **GIVE CONSTRUCTORS A COMPLETE REPORT AND GUIDANCE**

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

#### **READ RESPONSIBILITY PROVISIONS CLOSELY**

Some clients, design professionals, and constructors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic

expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineer's responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

#### **ENVIRONMENTAL CONCERNS ARE NOT COVERED**

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

#### **OBTAIN PROFESSIONAL ASSISTANCE TO DEAL WITH MOLD**

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention.* *Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

#### **RELY ON YOUR GEOTECHNICAL ENGINEER FOR ADDITIONAL ASSISTANCE**

Membership in the Geotechnical Business Council (GBC) of Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with CGC, a member of GBC, for more information.

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Geotechnical Business Council  
of the Geoprofessional Business Association  
8811 Colesville Road, Suite G 106  
Silver Spring, MD 20910

**APPENDIX D**

**RECOMMENDED COMPACTED FILL SPECIFICATIONS**

## **APPENDIX D**

### **CGC, INC.**

#### **RECOMMENDED COMPACTED FILL SPECIFICATIONS**

##### **General Fill Materials**

Proposed fill shall contain no vegetation, roots, topsoil, peat, ash, wood or any other non-soil material which by decomposition might cause settlement. Also, fill shall never be placed while frozen or on frozen surfaces. Rock, stone or broken concrete greater than 6 in. in the largest dimension shall not be placed within 10 ft of the building area. Fill used greater than 10 ft beyond the building limits shall not contain rock, boulders or concrete pieces greater than a 2 sq ft area and shall not be placed within the final 2 ft of finish subgrade or in designated utility construction areas. Fill containing rock, boulders or concrete pieces should include sufficient finer material to fill voids among the larger fragments.

##### **Special Fill Materials**

In certain cases, special fill materials may be required for specific purposes, such as stabilizing subgrades, backfilling undercut excavations or filling behind retaining walls. For reference, WisDOT gradation specifications for various types of granular fill are attached in Table 1.

##### **Placement Method**

The approved fill shall be placed, spread and leveled in layers generally not exceeding 10 in. in thickness before compaction. The fill shall be placed at moisture content capable of achieving the desired compaction level. For clay soils or granular soils containing an appreciable amount of cohesive fines, moisture conditioning will likely be required.

It is the Contractor's responsibility to provide all necessary compaction equipment and other grading equipment that may be required to attain the specified compaction. Hand-guided vibratory or tamping compactors will be required whenever fill is placed adjacent to walls, footings, columns or in confined areas.

##### **Compaction Specifications**

Maximum dry density and optimum moisture content of the fill soil shall be determined in accordance with modified Proctor methods (ASTM D1557). The recommended field compaction as a percentage of the maximum dry density is shown in Table 2. Note that these compaction guidelines would generally not apply to coarse gravel/stone fill. Instead, a method specification would apply (e.g., compact in thin lifts with a vibratory compactor until no further consolidation is evident).

##### **Testing Procedures**

Representative samples of proposed fill shall be submitted to CGC, Inc. for optimum moisture-maximum density determination (ASTM D1557) prior to the start of fill placement. The sample size should be approximately 50 lb.

CGC, Inc. shall be retained to perform field density tests to determine the level of compaction being achieved in the fill. The tests shall generally be conducted on each lift at the beginning of fill placement and at a frequency mutually agreed upon by the project team for the remainder of the project.

**Table 1  
Gradation of Special Fill Materials**

Material	WisDOT Section 311	WisDOT Section 312	WisDOT Section 305			WisDOT Section 209		WisDOT Section 210
	Breaker Run	Select Crushed Material	3-in. Dense Graded Base	1 1/4-in. Dense Graded Base	3/4-in. Dense Graded Base	Grade 1 Granular Backfill	Grade 2 Granular Backfill	Structure Backfill
Sieve Size	Percent Passing by Weight							
6 in.	100							
5 in.		90-100						
3 in.			90-100					100
1 1/2 in.		20-50	60-85					
1 1/4 in.				95-100				
1 in.					100			
3/4 in.			40-65	70-93	95-100			
3/8 in.				42-80	50-90			
No. 4			15-40	25-63	35-70	100 (2)	100 (2)	25-100
No. 10		0-10	10-30	16-48	15-55			
No. 40			5-20	8-28	10-35	75 (2)		
No. 100						15 (2)	30 (2)	
No. 200			2-12	2-12	5-15	8 (2)	15 (2)	15 (2)

**Notes:**

1. Reference: Wisconsin Department of Transportation *Standard Specifications for Highway and Structure Construction*.
2. Percentage applies to the material passing the No. 4 sieve, not the entire sample.
3. Per WisDOT specifications, both breaker run and select crushed material can include concrete that is 'substantially free of steel, building materials and other deleterious material'.

**Table 2  
Compaction Guidelines**

Area	Percent Compaction (1)	
	Clay/Silt	Sand/Gravel
<b><u>Within 10 ft of building lines</u></b>		
Footing bearing soils	93 - 95	95
Under floors, steps and walks		
- Lightly loaded floor slab	90	90
- Heavily loaded floor slab and thicker fill zones	92	95
<b><u>Beyond 10 ft of building lines</u></b>		
Under walks and pavements		
- Less than 2 ft below subgrade	92	95
- Greater than 2 ft below subgrade	90	90
Landscaping	85	90

**Notes:**

1. Based on Modified Proctor Dry Density (ASTM D 1557)

**APPENDIX E**

**WISCONSIN DEPARTMENT OF SAFETY & PROFESSIONAL SERVICES  
SOIL EVALUATION – STORM FORM (4 TEST PITS)**



Division of Industry Services  
P.O. Box 2658  
Madison, Wisconsin 53701

**Attachment 2:**

**SOIL AND SITE EVALUATION - STORM**

In accordance with SPS 382.365, 385, Wis. Adm. Code, and WDNR Standard 1002

Attach a complete site plan on paper not less than 8 1/2 x 11 inches in size. Plan must include, but not limited to: vertical and horizontal reference point (BM), direction and percent of slope, scale or dimensions, north arrow, and BM referenced to nearest road  <b>Please print all information</b>  Personal information you provide may be used for secondary purposes [Privacy Law, s. 15.04(1)(m)]	County	Dane
	Parcel I.D.	281/0511-091-8610-4
	Reviewed by:	
		Date:

Property Owner	Dane County	Property Location	Govt. Lot NW 1/4 NE 1/4 S 09 T 05 N R 11 E
Property Owner's Mail Address	210 Martin Luther King Jr. Boulevard, Room 114	Lot #	1
		Block#	
		Subd. Name or CSM #	CSM 02722
City	Madison	State	WI
Zip Code	53703-3342	Phone Number	
		<input checked="" type="checkbox"/> City	<input type="checkbox"/> Village
		<input type="checkbox"/> Town	Nearest Road
		Stoughton	125 Veterans Road
Drainage area	<input type="checkbox"/> sq ft	<input type="checkbox"/> acres	
Test site suitable for (check all that apply):	<input type="checkbox"/> Site not suitable;	<input checked="" type="checkbox"/> Morphological Evaluation	Soil Moisture
<input type="checkbox"/> Bioretention;	<input type="checkbox"/> Subsurface Dispersal System;	<input type="checkbox"/> Double Ring Infiltrometer	Date of soil borings: _____
<input type="checkbox"/> Reuse;	<input type="checkbox"/> Irrigation;	<input type="checkbox"/> Other: (specify) _____	USDA-NRCS WETS Value:
			<input type="checkbox"/> Dry = 1;
			<input type="checkbox"/> Normal = 2;
			<input type="checkbox"/> Wet = 3.

TP-1 #OBS.  Pit  Boring Ground surface elevation 899.5 ft. Elevation of limiting factor 899.0 ft. (Color/Redox)

Horizon	Approx. Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines (P200)	Hydraulic App Rate Inches/Hr
1	0-6	10YR 5/2	none	SiL	1fgr	mfr	gs	<5		0.13
2	6-29	10YR 6/1	f2d 10YR 4/3	SiL	2mabk	mfi	gs	<5		0.13
3	29-62	10YR 5/2	c2d 10YR 6/4, 6/1	SiCL	0m	mfi	cs	<5		0.04
4	62-78	10YR 5/4	none	GRSCL	1mabk	mfr	cs	15-25		0.11
5	78-144	10YR 6/4	none	VGRSL	0sg	ml	n/a	43	14	1.63

Comments: Low-chroma/high-value dominant color and/or redox in Horizons 2 and 3 indicates level of past saturation from perched water, periodically infiltrating surface water or seasonally elevated groundwater; however, groundwater was not encountered during or upon completion of excavating.

TP-2 #OBS.  Pit  Boring Ground surface elevation 900.0 ft. Elevation of limiting factor 899.3 ft. (Color/Redox)

Horizon	Approx. Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines (P200)	Hydraulic App Rate Inches/Hr
1	0-9	10YR 5/1	none	SiL	2mgr	mfr	gs	<5		0.13
2	9-35	10YR 6/1	c2d 10YR 5/3	SiCL	0m	mvfi	gs	<5		0.04
3	35-59	10YR 5/3	c2f 10YR 6/1	SiCL	0m	mvfi	cs	<5		0.04
4	59-64	10YR 5/4	none	GRSCL	1mabk	mfr	cs	15-25		0.11
5	64-96	10YR 6/4	none	VGRSL	0sg	ml	gs	40-50		1.63
6	96-144	10YR 6/4	none	XGRS	0sg	ml	n/a	68	1	3.60

Comments: Low-chroma/high-value dominant color and/or redox in Horizons 2 and 3 indicates level of past saturation from perched water, periodically infiltrating surface water or seasonally elevated groundwater; however, groundwater was not encountered during or upon completion of excavating.

Name (Please Print)	Tim F. Gassenheimer	Signature		Credential Number	SP-011900004
Address	129 Milky Way, Madison, WI 53718	Date Evaluation Conducted	August 26, 2020	Telephone Number	(608) 288-4100



TP-3 #OBS. <input checked="" type="checkbox"/> Pit <input type="checkbox"/> Boring Ground surface elevation <u>897.0</u> ft. Elevation of limiting factor <u>895.8</u> ft. (Color/Redox)										
Horizon	Approx. Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines (P200)	Hydraulic App Rate Inches/Hr
1	0-15	10YR 6/1	none	SiL	2mgr	mfr	gs	<5		0.13
2	15-38	10YR 6/1	c2p 10YR 4/6	SiCL	0m	mvfi	cs	<5		0.04
3	38-47	10YR 4/4	c3f 10YR 6/1	FSL	2mabk	mfr	gs	<5		0.50
4	47-52	10YR 4/3	none	GRSCL	1mabk	mfi	cs	15-25		0.11
5	52-96	10YR 5/3	none	VGRLS	0sg	ml	gs	54	16	1.63
6	96-144	10YR 6/3	none	VGRS	0sg	ml	n/a	35-45		3.60
Comments: Low-chroma/high-value dominant color and/or redox in Horizons 2 and 3 indicates level of past saturation from perched water, periodically infiltrating surface water or seasonally elevated groundwater; however, groundwater was not encountered during or upon completion of excavating.										

TP-4 #OBS. <input checked="" type="checkbox"/> Pit <input type="checkbox"/> Boring Ground surface elevation <u>898.0</u> ft. Elevation of limiting factor <u>897.3</u> ft. (Redox)										
Horizon	Approx. Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines (P200)	Hydraulic App Rate Inches/Hr
1	0-9	10YR 6/1	none	SiL	2mgr	mfr	gs	<5		0.13
2	9-46	10YR 5/4	c2f 10YR 6/2	SiCL	2mabk	mvfi	cs	<5		0.04
3	46-144	10YR 6/4	none	XGRLS	0sg	ml	n/a	65	7	1.63
Comments: Redox in Horizons 2 indicates level of past saturation from perched water, periodically infiltrating surface water or seasonally elevated groundwater; however, groundwater was not encountered during or upon completion of excavating.										

Overall Site Comments: See Comments above and Stormwater Infiltration Potential section in Geotechnical Exploration Report.

Name of Bidding Firm: \_\_\_\_\_

SECTION 00 41 13

BID FORM

**BID NO. 320038**

**PROJECT: DANE COUNTY SHERRIF'S SE PRECINCT REMODEL & ADDITION  
125 VETERANS ROAD, STOUGHTON**

**TO: DANE COUNTY DEPARTMENT OF PUBLIC WORKS, HIGHWAY &  
TRANSPORTATION PROJECT MANAGER  
1919 ALLIANT ENERGY CENTER WAY  
MADISON, WISCONSIN 53713**

**BASE BID - LUMP SUM:**

Project consists of the full renovation of an existing facility, an addition of a garage, and site work. The undersigned, having examined the site where the Work is to be executed and having become familiar with local conditions affecting the cost of the Work and having carefully examined the Drawings and Specifications, all other Construction Documents and Addenda thereto prepared by Dane County Department of Public Works, Highway & Transportation hereby agrees to provide all labor, materials, equipment, and services necessary for the complete and satisfactory execution of the entire Work, as specified in the Construction Documents, for the Base Bid stipulated sum of:

\_\_\_\_\_ and \_\_/100 Dollars  
Written Price

\$ \_\_\_\_\_  
Numeric Price

**UNIT PRICING:**

Add price for providing replacement of existing roof sheathing (Section 06 16 00):

- Remove and reinstall roof sheathing: @ \$ \_\_\_\_\_/sq.ft.

Receipt of the following addenda and inclusion of their provisions in this Bid is hereby acknowledged:

Addendum No(s). \_\_\_\_\_ through \_\_\_\_\_

Dated \_\_\_\_\_

Dane County Sheriff's Office must have this project completed by November 1, 2021. Assuming this Work can be started by April 20, 2021, what dates can you commence and complete this job?

Commencement Date: \_\_\_\_\_ Completion Date: \_\_\_\_\_  
(final, not substantial)

I hereby certify that all statements herein are made on behalf of:

\_\_\_\_\_  
(Name of Corporation, Partnership or Person submitting Bid)

Select one of the following:

1. A corporation organized and existing under the laws of the State of \_\_\_\_\_, or
2. A partnership consisting of \_\_\_\_\_, or
3. A person conducting business as \_\_\_\_\_;

Of the City, Village, or Town of \_\_\_\_\_ of the State of \_\_\_\_\_.

I have examined and carefully prepared this Bid from the associated Construction Documents and have checked the same in detail before submitting this Bid; that I have full authority to make such statements and submit this Bid in (its) (their) (my) behalf; and that the said statements are true and correct. In signing this Bid, we also certify that we have not, either directly or indirectly, entered into any agreement or participated in any collusion or otherwise taken any action in restraint of free competition; that no attempt has been made to induce any other person or firm to submit or not to submit a Bid; that this Bid has been independently arrived at without collusion with any other bidder, competitor, or potential competitor; that this Bid has not been knowingly disclosed prior to the Bids Due Date to another bidder or competitor; that the above statement is accurate under penalty of perjury.

The undersigned is qualified as a Best Value Contractor or has proven their exemption. Qualification or exemption shall be complete before Bid Due Date / Time.

The undersigned further agrees to honor the Base Bid and the Alternate Bid(s) for sixty (60) calendar days from date of Award of Contract.

**SIGNATURE:** \_\_\_\_\_  
(Bid is invalid without signature)

Print Name: \_\_\_\_\_ Date: \_\_\_\_\_

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

Address: \_\_\_\_\_

Telephone No.: \_\_\_\_\_ Fax No.: \_\_\_\_\_

Email Address: \_\_\_\_\_

Contact Person: \_\_\_\_\_

END OF SECTION

**THIS PAGE IS FOR BIDDERS' REFERENCE**  
**DO NOT SUBMIT WITH BID FORM.**

**BID CHECK LIST:**

These items **must** be included with Bid:

Bid Form

Bid Bond

Fair Labor Practices Certification

**DANE COUNTY BEST VALUE CONTRACTING QUALIFICATION**

General Contractors & all Subcontractors must be qualified as a Best Value Contractor with the Dane County Public Works Engineering Division. Qualification & listing is not permanent & must be renewed every 24 months. Complete a *Best Value Contracting Application* online at:

[pwht.countyofdane.com/bvc\\_application.aspx](http://pwht.countyofdane.com/bvc_application.aspx)

**DANE COUNTY VENDOR REGISTRATION PROGRAM**

All bidders are strongly encouraged to be a registered vendor with Dane County. Registering allows vendors an opportunity to receive notifications for RFBs & RFPs issued by the County and provides the County with up-to-date company contact information. Complete a new form or renewal online at:

[danepurchasing.com/Account/Login?](http://danepurchasing.com/Account/Login?)

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SECTION 00 43 36

PROPOSED SUBCONTRACTORS FORM

General Contractor Name: \_\_\_\_\_ Bid No: \_\_\_\_\_

Instructions:

1. Complete all information in table below.
2. Include this Form with signed Construction Contract (Section 00 52 96).
3. General contractors & subcontractors must be qualified & registered as Best Value Contractor (Dane County Ordinances, Chapter 40.07). General contractors must be qualified & registered before bids are due. Subcontractors must be qualified & registered before returning signed Construction Contract to Dane County Public Works. No contractor can perform work without being qualified & registered.
4. Sample Best Value Contracting Application is included in this RFB package for informational purposes; fill out form online ([publicworks.countyofdane.com/bvc](http://publicworks.countyofdane.com/bvc)).

SUBCONTRACTOR NAME	ADDRESS & PHONE NO.	DIVISION OF WORK	\$\$ AMOUNT OF CONTRACT

Check box if there is another form page attached to include additional subcontractors.

The undersigned, for and on behalf of the General Contractor named herein, certifies the information on this Form is accurate.

\_\_\_\_\_  
Officer or Authorized Agent Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed or Typed Name and Title



**COUNTY OF DANE**

**PUBLIC WORKS CONSTRUCTION CONTRACT**

Contract No. \_\_\_\_\_ Bid No. 320038

Authority: 2020 RES - \_\_\_\_\_

**THIS CONTRACT**, made and entered into as of the date by which authorized representatives of both parties have affixed their signatures, by and between the County of Dane (hereafter referred to as "COUNTY") and \_\_\_\_\_ (hereafter, "CONTRACTOR"), and

**WITNESSETH:**

**WHEREAS**, COUNTY, whose address is c/o Deputy Public Works Director, 1919 Alliant Energy Center Way, Madison, WI 53713, desires to have CONTRACTOR furnish construction service for Dane County Sheriff's SE Precinct Remodel and Addition at 125 Veterans Road, Stoughton, (including Alternate Bid[s] X, Y & Z (if applicable)) ("the Project"); and

**WHEREAS**, CONTRACTOR, whose address is \_\_\_\_\_ is able and willing to construct the Project, in accordance with the Construction Documents;

**NOW, THEREFORE**, in consideration of the above premises and the mutual covenants of the parties hereinafter set forth, the receipt and sufficiency of which is acknowledged by each party for itself, COUNTY and CONTRACTOR do agree as follows:

1. CONTRACTOR agrees to construct, for the price of \$\_\_\_\_\_ the Project and at the CONTRACTOR'S own proper cost and expense to furnish all materials, supplies, machinery, equipment, tools, superintendence labor, insurance, and other accessories and services necessary to complete the Project in accordance with the conditions and prices stated in the Bid Form, General Conditions of Contract, the drawings which include all maps, plats, plans, and other drawings and printed or written explanatory matter thereof, and the specifications therefore as prepared by OPN Incorporated (hereinafter referred to as "the Architect / Engineer"), and as enumerated in the Project Manual Table of Contents, all of which are made a part hereof and collectively evidence and constitute the Contract.
2. COUNTY agrees to pay the CONTRACTOR in current funds for the performance of the Contract subject to additions and deductions, as provided in the General Conditions of Contract, and to make payments on account thereof as provided in Article entitled, "Payments to Contractor" of the General Conditions of Contract.
3. During the term of this Contract, CONTRACTOR agrees to take affirmative action to ensure equal employment opportunities. The CONTRACTOR agrees in accordance with Wisconsin Statute 111.321 and Chapter 19 of the Dane County Code of Ordinances not to discriminate on the basis of age, race, ethnicity, religion, color, gender, disability, marital status, sexual orientation, national origin, cultural differences, ancestry, physical appearance, arrest record or conviction record, military participation or membership in the national guard, state defense force or any other reserve component of the military forces of the United States, or political beliefs.



Such equal opportunity shall include, but not be limited to, the following: employment, upgrading, demotion, transfer, recruitment, advertising, layoff, termination, training, rates of pay, and any other form of compensation. CONTRACTOR agrees to post in conspicuous places, available to all employees and applicants for employment, notices setting forth the provisions of this paragraph.

**4.** CONTRACTOR shall file an Affirmative Action Plan with the Dane County Contract Compliance Specialist in accord with Chapter 19 of the Dane County Code of Ordinances. CONTRACTOR must file such plan within fifteen (15) business days of the effective date of this Contract. During the term of this Contract CONTRACTOR shall also provide copies of all announcements of employment opportunities to COUNTY'S Office of Equity & Inclusion, and shall report annually the number of persons, by race, ethnicity, gender, and disability status, which apply for employment and, similarly classified, the number hired and number rejected.

**5.** During the term of this Contract, all solicitations for employment placed on CONTRACTOR'S behalf shall include a statement to the effect that CONTRACTOR is an "Equal Opportunity Employer".

**6.** CONTRACTOR agrees to furnish all information and reports required by COUNTY'S Contract Compliance Specialist as the same relate to affirmative action and nondiscrimination, which may include any books, records, or accounts deemed appropriate to determine compliance with Chapter 19, Dane County Code of Ordinances, and the provisions of this Contract.

**7.** This Contract is intended to be a Contract solely between the parties hereto and for their benefit only. No part of this Contract shall be construed to add to, supplement, amend, abridge or repeal existing rights, benefits or privileges of any third party or parties including, but not limited to, employees of either of the parties.

**8.** The entire agreement of the parties is contained herein and this Contract supersedes any and all oral agreements and negotiations between the parties relating to the subject matter hereof. The parties expressly agree that the express terms of this Contract shall not be amended in any fashion except in writing, executed by both parties.

**9.** CONTRACTOR must be qualified as a Best Value Contractor or have proven their exemption with Dane County Public Works Engineering Division before Bid Due Date / Time. All contractors and subcontractors must be qualified as a Best Value Contractor or have proven their exemption to perform any work under this Contract.

**IN WITNESS WHEREOF**, COUNTY and CONTRACTOR, by their respective authorized agents, have caused this Contract and its Schedules to be executed, effective as of the date by which all parties hereto have affixed their respective signatures, as indicated below.

\* \* \* \* \*

**FOR CONTRACTOR:**

\_\_\_\_\_  
Signature Date

\_\_\_\_\_  
Printed or Typed Name and Title

\_\_\_\_\_  
Signature Date

\_\_\_\_\_  
Printed or Typed Name and Title

**SAMPLE**  
**NOTE:** If CONTRACTOR is a corporation, Secretary should attest. In accordance with IRS Regulations, unincorporated entities are required to provide either their Social Security or Employer Number in order to receive payment for services rendered.

\* \* \* \* \*

This Contract is not valid or effectual for any purpose until approved by the appropriate authority designated below, and no work is authorized until the CONTRACTOR has been given notice to proceed by COUNTY'S Deputy Public Works Director.

**FOR COUNTY:**

\_\_\_\_\_  
Joseph T. Parisi, County Executive Date

\_\_\_\_\_  
Scott McDonell, County Clerk Date

**END OF SECTION**

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# AIA<sup>®</sup> Document A310<sup>™</sup> – 2010

## Bid Bond

**CONTRACTOR:**

(Name, legal status and address)

**SURETY:**

(Name, legal status and principal place of business)

**OWNER:**

(Name, legal status and address)

**BOND AMOUNT:****PROJECT:**

(Name, location or address, and Project number, if any)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_

_____	(Contractor as Principal)	_____	(Seal)
(Witness)		_____	(Title)
		_____	(Surety)
_____		_____	(Seal)
(Witness)		_____	(Title)

**CAUTION:** You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

# AIA<sup>®</sup> Document A312<sup>™</sup> – 2010

## Performance Bond

**CONTRACTOR:**

*(Name, legal status and address)*

**SURETY:**

*(Name, legal status and principal place of business)*

**OWNER:**

*(Name, legal status and address)*

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

**CONSTRUCTION CONTRACT**

Date:

Amount:

Description:

*(Name and location)*

**BOND**

Date:

*(Not earlier than Construction Contract Date)*

Amount:

Modifications to this Bond:  None  See Section 16

**CONTRACTOR AS PRINCIPAL**

Company: *(Corporate Seal)*

**SURETY**

Company: *(Corporate Seal)*

Signature: \_\_\_\_\_

Name \_\_\_\_\_  
and Title: \_\_\_\_\_

Signature: \_\_\_\_\_

Name \_\_\_\_\_  
and Title: \_\_\_\_\_

*(Any additional signatures appear on the last page of this Performance Bond.)*

*(FOR INFORMATION ONLY — Name, address and telephone)*

**AGENT or BROKER:**

**OWNER'S REPRESENTATIVE:**

*(Architect, Engineer or other party:)*

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

#### § 14 Definitions

§ 14.1 **Balance of the Contract Price.** The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 **Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 **Contractor Default.** Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

Sample

*(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)*

**CONTRACTOR AS PRINCIPAL**

**SURETY**

Company: \_\_\_\_\_

*(Corporate Seal)*

Company: \_\_\_\_\_

*(Corporate Seal)*

Signature: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Address \_\_\_\_\_

Signature: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Address \_\_\_\_\_

**CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.**





# AIA® Document A312™ – 2010

## Payment Bond

**CONTRACTOR:**

*(Name, legal status and address)*

**SURETY:**

*(Name, legal status and principal place of business)*

**OWNER:**

*(Name, legal status and address)*

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

**CONSTRUCTION CONTRACT**

Date:

Amount:

Description:

*(Name and location)*

**BOND**

Date:

*(Not earlier than Construction Contract Date)*

Amount:

Modifications to this Bond:  None  See Section 18

**CONTRACTOR AS PRINCIPAL**

Company: *(Corporate Seal)*

**SURETY**

Company: *(Corporate Seal)*

Signature: \_\_\_\_\_

Name \_\_\_\_\_  
and Title: \_\_\_\_\_

Signature: \_\_\_\_\_

Name \_\_\_\_\_  
and Title: \_\_\_\_\_

*(Any additional signatures appear on the last page of this Payment Bond.)*

*(FOR INFORMATION ONLY — Name, address and telephone)*

**AGENT or BROKER:****OWNER'S REPRESENTATIVE:**

*(Architect, Engineer or other party:)*

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

#### § 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

*(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)*

**CONTRACTOR AS PRINCIPAL**

Company: \_\_\_\_\_

(Corporate Seal)

**SURETY**

Company: \_\_\_\_\_

(Corporate Seal)

Signature: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Address \_\_\_\_\_

Signature: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Address \_\_\_\_\_

**CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.**

SECTION 00 72 13

GENERAL CONDITIONS OF CONTRACT

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## **1. CONSTRUCTION DOCUMENTS**

- A. Construction Documents, listed in Table of Contents of this Specification volume shall form part of this Contract and provisions of Construction Documents shall be as binding upon parties as if they were fully set forth in Contract itself.
- B. These shall also be considered as part of Construction Documents: Addenda, including additions and modifications incorporated in such addenda before execution of Contract; requests for information; construction bulletins; change orders; and written interpretations by Architect / Engineer or Public Works Project Manager that are made after execution of Contract.
- C. Construction Documents are complementary, and what is required by one shall be as binding as if required by all. Intent of Construction Documents is to include all labor, materials and equipment necessary for proper execution of the Work.

## **2. DEFINITIONS**

- A. These terms as used in this Contract are respectively defined as follows:
  - 1. All uses of term “County” in Construction Documents shall mean Dane County.
  - 2. All uses of term “Department” in Construction Documents shall mean Department of Public Works, Highway & Transportation, which is a unit of Dane County government. Department is County agency overseeing Contract with Contractor.
  - 3. Public Works Project Manager is appointed by and responsible to Department. Public Works Project Manager has authority to act on behalf of Department and will sign change orders, payment requests and other administrative matters related to projects.
  - 4. Public Works Project Manager is responsible for supervision, administration and management of field operations involved in construction phase of this Work.
  - 5. Term “Work” includes all labor, equipment and materials necessary to produce project required by Construction Documents.
  - 6. Term “Substantial Completion” is date when project or specified area of project is certified by Architect / Engineer that construction is sufficiently completed, in accordance with Construction Documents, and as modified by any subsequent changes agreed to by parties, so that County may occupy project or specified area of project for use for which it was intended subject to permit approval for occupancy.
  - 7. Contractor is person, firm, or corporation with whom County makes Contract. Though multiple contracts may be involved, Construction Documents treat them throughout as if each were of singular number.

## **3. ADDITIONAL INSTRUCTIONS AND DRAWINGS**

- A. Contractor may be furnished additional instructions and detail drawings as necessary to carry out the Work included in Contract. Additional drawings and instructions thus supplied to Contractor will coordinate with Construction Documents and will be so prepared that they can be reasonably interpreted as part thereof. Contractor shall carry out the Work in accordance with additional detail drawings and instructions.

#### **4. SHOP DRAWINGS, PRODUCT DATA AND SAMPLES**

- A. Unless otherwise agreed upon by Architect / Engineer and Public Works Project Manager, Contractor shall submit three (3) copies of all Shop Drawings for each submission, until receiving final approval. After final approval, provide five (5) additional copies for distribution and such other copies as may be required.
- B. Contractor shall submit, on an on-going basis and as directed, Product Data such as brochures that shall contain catalog cuts and specifications of all furnished mechanical and electrical equipment. After Architect / Engineer's approval, one (1) copy shall remain in Architect / Engineer's file, one (1) kept at Department's office and one (1) kept at job site by Contractor for reference purposes.
- C. Samples shall consist of physical examples furnished by Contractor in sufficient size and quantity to illustrate materials, equipment or workmanship, and to establish standards to compare the Work.
  - 1. Submit Samples in sufficient quantity (minimum of two (2)) to permit Architect / Engineer to make all necessary tests and of adequate size showing quality, type, color range, finish, and texture. Label each Sample stating material, type, color, thickness, size, project name, and Contractor's name.
  - 2. Submit transmittal letter requesting approval, and prepay transportation charges to Architect / Engineer's office on samples forwarded.
  - 3. Materials installed shall match approved Samples.
- D. Contractor shall review Shop Drawings and place their dated stamp thereon to evidence their review and approval and shall submit with reasonable promptness and in orderly sequence to cause no delay in the Work or in work of any other contractor. At time of submission, Contractor shall inform Architect / Engineer in writing of any deviation in Shop Drawings or Samples from requirements of Construction Documents. Architect / Engineer will not consider partial lists.
- E. Architect / Engineer will review and approve or reject Shop Drawings with reasonable promptness to cause no delay. Architect / Engineer's approval shall not relieve Contractor from responsibility for errors or omissions in Shop Drawings.
- F. Contractor shall not commence any work requiring Shop Drawing, Product Data or Sample submission until Architect / Engineer has approved submission. All such work shall be in accordance with approved Shop Drawings, Product Data and Samples.
- G. Contractor shall keep on site of the Work, approved or conformed copy of Shop Drawings and shall at all times give Department access thereto.
- H. By stamping and submitting Shop Drawings, Product Data and Samples, Contractor thereby represents that he or she has or will determine and verify all field measurements, field construction criteria, materials, catalog numbers, and similar data and that he or she has checked and coordinated each Shop Drawing, Product Data and Sample with requirements of the Work and of Construction Documents. Architect / Engineer shall return without examination, Shop Drawings, Product Data and Samples not so noted.
- I. All Shop Drawings from any one Contractor should be numbered consecutively and on cover sheet shall bear name and location of project, name of Contractor, date of submittal and date of each correction or revision and associated Specification section and page number.

## **5. CUTTING AND PATCHING**

- A. Contractor shall be responsible for all cutting, fitting or patching required to complete the Work or to make its parts fit together properly.
- B. Contractor shall not damage or endanger portion of the Work or fully or partially completed construction of County or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. Contractor shall not cut or otherwise alter such construction by County or separate contractor except with written consent of County and of such separate contractor; such consent shall not be unreasonably withheld. Contractor shall not withhold unreasonably from County or separate contractor, Contractor's consent to cutting or otherwise altering the Work.

## **6. CLEANING UP**

- A. Contractor shall keep premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under Contract. Contractor shall remove from and about the Work waste materials, rubbish, Contractor's tools, construction equipment, machinery, and surplus materials at completion of the Work. Contractor shall maintain streets and sidewalks around the Work site in clean condition. Contractor shall remove all spillage and prevent tracking of spillage arising from performance of the Work, into, out of, and within the Work site. Contractor shall establish regular maintenance program of sweeping, vacuuming and / or hosing to minimize accumulation of dirt and dust upon such areas.
- B. If Contractor fails to clean up as directed in Construction Documents, County may do so and shall charge Contractor cost thereof.
- C. Contractor shall be responsible for broken windows and glass, and at completion of the Work shall replace such damaged or broken windows and glass. After replacing damaged or broken windows and glass, Contractor shall remove all labels, wash and polish both sides of all windows and glass.
- D. In addition to general cleaning (sweeping, vacuuming and / or hosing, as is appropriate to work surface), Contractor shall perform following final cleaning for all trades at completion of the Work:
  - 1. Remove temporary protections;
  - 2. Remove marks, stains, fingerprints and other soil or dirt from painted, decorated and finished woodwork and wall surfaces;
  - 3. Remove spots, plaster, soil and paint from ceramic tile, marble and other finished materials, and wash or wipe clean;
  - 4. Clean fixtures, cabinet work and equipment, removing stains, paint, dirt and dust, and leave same in undamaged, new condition;
  - 5. Clean aluminum in accordance with recommendations of manufacturer; and
  - 6. Clean resilient floors thoroughly with well-rinsed mop containing only enough moisture to clean off any surface dirt or dust and buff dry by machine to bring surfaces to sheen.

## **7. USE OF SITE**

- A. Contractor shall provide County and Architect / Engineer access to the Work under all circumstances.



- B. Contractor shall confine operations at site to areas permitted by County, law, ordinance, permits and Construction Documents and shall not unreasonably encumber site with materials or equipment. Contractor shall assure free, convenient, unencumbered, direct and safe access to all properties adjacent to the Work for County, its employees, invitees and guests.

## **8. MATERIALS AND WORKMANSHIP**

- A. Contractor shall perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, necessary to complete the Work required by this Contract, within time specified, in accordance with provisions of Construction Documents.
- B. All equipment and materials incorporated in the Work covered by this Contract are to be new; use recycled and / or recovered materials to extent that such use is technically and economically feasible. Recovered materials are products recovered from solid waste in form identical to original form for use that is same as, or similar to original use. Recycled materials are products manufactured from solid waste.
- C. If requested, Contractor shall furnish satisfactory evidence as to kind and quality of construction materials proposed or used. Contractor shall furnish to Architect / Engineer, for approval, manufacturer name and model, performance capacities and other pertinent information of machinery, mechanical, electrical or other types of equipment, which Contractor plans to install.
- D. If not otherwise provided, materials and labor called for in this Contract shall be provided and performed in accordance with established practice and standards recognized by Architects, Engineers, Department, and construction industry.
- E. Reference to “Standard” specifications of any association or manufacturer, or codes of County authorities, intends most recent printed edition or catalog in effect on date that corresponds with date of Construction Documents.
- F. Whenever reference is made in Specifications that work shall be “performed”, “applied”, in accordance with “manufacturer’s directions or instructions”, Contractor to whom those instructions are directed shall furnish three (3) printed copies of such instructions to Architect / Engineer before execution of the Work.

## **9. CONTRACTOR’S TITLE TO MATERIALS**

- A. Contractor or any subcontractor shall not purchase materials or supplies for the Work subject to any chattel mortgage or under conditional sale contract or other agreement by which seller retains interest. Contractor warrants that all materials and supplies used in the Work are free from all liens, claims or encumbrances and Contractor has good title to them.

## **10. “OR EQUAL” CLAUSE**

- A. Whenever equipment or materials are identified on Drawings or in Specifications by reference to manufacturer’s or vendor’s name, trade name, catalog number, and other identifying information, it is intended to establish standards; and any equipment or material of other manufacturers and vendors which will perform adequately duties imposed by general design will be considered equally accepted provided equipment or material so proposed is, in opinion of Architect / Engineer, of equal substance and function. Architect / Engineer and Department shall provide written approval before Contractor may purchase or install it.

- B. Equipment or materials of manufacturers, other than those named, may be used only upon following conditions:
1. That, in opinion of Architect / Engineer and Department, proposed material or equipment item is fully equal or superior (in design, materials, construction, workmanship, performance, finish, etc.) to named item. No compromise in quality level, however small, is acceptable.
  2. That, in substituting materials or equipment, Contractor assumes responsibility for any changes in system or for modifications required in adjacent or related work to accommodate such substitution despite Architect / Engineer's and Department's approval, and all costs growing out of approval of "or equal" items shall be responsibility of Contractor. No extra costs resulting from such approval shall become responsibility of Department, Architect / Engineer or any other separate Contractor.
  3. It shall be understood that use of materials or equipment other than those specified, or approved equal by Architect / Engineer and Department, shall constitute violation of Contract, and that Architect / Engineer and Department shall have right to require removal of such materials or equipment and their replacement with specified materials or equipment at Contractor's expense.
  4. Product and manufacturer named first in Specifications or on information shown on Drawings is basis of selection of manufactured items and equipment, particularly mechanical equipment. In using other than first named products or manufacturers, including those specified as additionally approved or acceptable, Contractor assumes responsibility for any changes in system and for modifications in any work required to accommodate them. Architect / Engineer's approval of such additionally acceptable products or manufacturers, either in Specifications or in Addendum, does not relieve Contractor from obligation to coordinate such optional products with other Contractors, whose work may be affected by them, and to pay all additional costs resulting from their inclusion into the Work. Contractor's liability shall include payment of Architect / Engineer's fees for any additional services made necessary by or directly connected to such product changes. No extra costs resulting from such changes shall become responsibility of Department, Architect / Engineer or any other separate Contractor.
- C. No request for approval of "or equal" materials will be entertained except from Contractor. Identify any request for substitution as substitution on Contractor's letter of transmittal and give reasons for substitution. Department may in its sole discretion allow substitutions of materials.

## **11. PATENTS AND ROYALTIES**

- A. If Contractor uses any design, device or material covered by letters, patent or copyright, it is mutually agreed and understood, that, without exception, contract prices shall include all royalties or costs arising from use of such design, device or materials, in any way involved in the Work.
- B. Contractor shall indemnify and save harmless County from any and all claims for infringement by reason of use of such patent or copyright in connection with the Work agreed to be performed under this Contract, and shall indemnify County for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during prosecution of the Work or after completion of the Work.

## **12. SURVEYS, PERMITS, REGULATIONS AND TAXES**

- A. Department will furnish to Contractor all site, topography and property surveys necessary for execution of the Work.
- B. Contractor shall procure all permits, licenses and approvals necessary for execution of this Contract.
- C. Contractor shall give all notices and comply with all State of Wisconsin, Federal and local laws, codes, rules and regulations relating to performance of the Work, protection of adjacent property, and maintenance of passageways, guard fences or other protective facilities.
- D. Contractor does not need to pay State and local sales & use taxes on building materials that become part of local unit government facilities. See Wisconsin Statute 77.54 (9m). This does not include materials for highways, streets or roads. Contractor shall pay any other Sales, Consumer, Use & other similar taxes or fees required by law.
- E. Contractor shall promptly notify Architect / Engineer of any variances of Drawings or Specifications with that of any State of Wisconsin, federal or local law, code, rule or regulation. Upon such notification, Architect / Engineer will require correction of variance to comply with applicable law, code, rule or regulation at no additional cost to Contractor.
- F. Work under this Contract shall comply with all applicable State of Wisconsin, Federal and local laws, codes and regulations.
- G. Contractor shall pay charges for water, sewer and other utility connections made by municipalities where required by Specifications.

### **13. CONTRACTOR'S OBLIGATIONS AND SUPERINTENDENCE**

- A. Contractor shall provide and pay for all materials, labor, tools, equipment, transportation and superintendence necessary to execute, complete and deliver the Work within specified time. Contractor agrees to secure at their own expense all personnel necessary to carry out the Work. Such personnel shall not be deemed County employees nor shall they have or be deemed to have any direct contractual relationship with County.
- B. Performance of any work necessary after regular working hours, on Sundays or Legal Holidays shall be without additional expense to County. Performance of any work at site at other than normal working hours must be coordinated with Public Works, Project Manager.
- C. Contractor shall furnish, erect, maintain and remove such temporary works as may be required.
- D. Contractor shall observe, comply with, and be subject to all terms, conditions, requirements and limitations of Construction Documents.
- E. At the Work site, Contractor shall give personal superintendence to the Work or shall employ construction superintendent or foreman, experienced in character of work covered by Contract, who shall have full authority to act for Contractor. Understand that such superintendent or foreman shall be acceptable to Architect / Engineer and Department.
- F. Remove from project or take other corrective action upon notice from Architect / Engineer or Department for Contractor's employees whose work is considered by Architect / Engineer or Department to be unsatisfactory, careless, incompetent, unskilled or otherwise objectionable.

- G. Contractor and subcontractors shall be required to conform to Labor Laws of State of Wisconsin and various acts amendatory and supplementary thereto and to other laws, ordinances and legal requirements applicable to the Work.
- H. Presence and observation of the Work by Architect / Engineer or Public Works Project Manager shall not relieve Contractor of any obligations.

#### **14. WEATHER CONDITIONS**

- A. In event of temporary suspension of work, or during inclement weather, or whenever Architect / Engineer shall direct, Contractor shall, and shall cause subcontractors to protect carefully all work and materials against damage or injury from weather. If, in opinion of Architect / Engineer or Department, any work or materials that have been damaged or injured due to failure on part of Contractor or any subcontractors so to protect the Work, such materials shall be removed and replaced at expense of Contractor.

#### **15. PROTECTION OF WORK AND PROPERTY**

- A. Contractor shall at all times safely guard County's property from injury or loss in connection with this Contract. Contractor shall at all times safely guard and protect the Work, and adjacent property, from damage. Contractor shall replace or make good any such damage, loss or injury unless such is caused directly by errors contained in Contract, or by County, or County's duly authorized representative.
- B. Contractor may act diligently, without previous instructions from Architect / Engineer and / or Department, in emergency that threatens loss or injury of property, or safety of life. Contractor shall notify Architect / Engineer and / or Department immediately thereafter. Promptly submit any claim for compensation by Contractor due to such extra work to Architect / Engineer and / or Department for approval as provided for in Article 18 herein.

#### **16. INSPECTION AND TESTING OF MATERIALS**

- A. Authorized representatives and agents of County government shall have access at all times to the Work wherever it is in preparation or progress and Contractor shall provide facilities for such access and for inspection.
- B. Should it be considered necessary or advisable at any time before final acceptance of the Work to make examination of work already completed, by removing or tearing out same, Contractor shall upon request, promptly furnish all necessary facilities, labor and materials. If such work is found to be defective in any aspect, due to fault of Contractor or subcontractors thereof, Contractor shall assume all expenses of such examination and of satisfactory reconstruction. Contractor will be reimbursed for such examination and replacement in accordance with Article 18 - A.3., of these General Conditions of Contract if such work is found to meet requirements of Contract.
- C. If Specifications, Architect / Engineer's, or Public Works Project Manager's instructions require any work to be specially tested or approved, Contractor shall give Architect / Engineer and Public Works Project Manager timely notice of its readiness for testing or inspection. Test all materials and equipment requiring testing in accordance with accepted or specified standards, as applicable. Architect / Engineer shall recommend laboratory or inspection agency and Department will select and pay for all initial laboratory inspection

services. Should retesting be required, due to failure of initial testing, cost of such retesting shall be borne by Contractor.

- D. Cost of any testing performed by manufacturers or Contractor for substantiating acceptability of proposed substitution of materials and equipment, or necessary conformance testing in conjunction with manufacturing processes or factory assemblage, shall be borne by Contractor or manufacturer responsible.

## **17. REPORTS, RECORDS AND DATA**

- A. Contractor shall submit to Architect / Engineer and Public Works Project Manager such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, invoices, records and other data as either may request concerning work performed or to be performed under this Contract.

## **18. CHANGES IN THE WORK**

- A. Make no changes, except in cases of emergency, in the Work covered by approved Construction Documents without having prior written approval of Department. Charges or credits for the Work covered by approved change shall be determined by one of these methods:
1. Unit bid prices previously approved.
  2. Agreed lump sum based on actual cost of:
    - a) Labor, including foremen, and all fringe benefits that are associated with their wages.
    - b) Materials entering permanently into the Work.
    - c) Ownership or rental cost of construction tools and equipment during time of use on extra work.
    - d) Power and consumable supplies for operation of power equipment.
    - e) Workmen's Compensation Insurance, Contractor's Public Liability and Property Damage Insurance, and Comprehensive Automobile Liability Insurance.
    - f) Social Security and old age and unemployment contributions.
    - g) Add to cost under (2), fixed fee to be agreed upon, but not to exceed fifteen percent (15%) of actual cost of work performed with their own labor force. Fee shall be compensation to cover cost of supervision, overhead, bond, profit and any other general expense.
    - h) On that portion of the Work under (2) done under subcontract, Contractor may include not over seven and one-half percent (7½%) for supervision, overhead, bond, profit and any other general expense.
    - i) Department may require correct amount of costs with supporting vouchers; Contractor shall keep and present in such form as directed.
  3. Cost-plus work, with not-to-exceed dollar limit, based on actual cost of:
    - a) Labor, including foremen, and all fringe benefits that are associated with their wages.
    - b) Materials entering permanently into the Work.
    - c) Ownership or rental cost of construction tools and equipment during time of use on extra work. Rental cost cannot exceed fifty percent (50%) replacement value of rented equipment.
    - d) Power and consumable supplies for operation of power equipment.
    - e) Workmen's Compensation Insurance, Contractor's Public Liability and Property Damage Insurance, and Comprehensive Automobile Liability Insurance.
    - f) Social Security and old age and unemployment contributions.
    - g) To cost under (3), there shall be added fixed fee to be agreed upon but not to exceed fifteen percent (15%) of actual cost of work performed with their own labor force.

Fee shall be compensation to cover cost of supervision, overhead, bond, profit, and any other general expense.

- h) On that portion of the Work under (3) done under subcontract, Contractor may include not over seven and one-half percent (7½%) for supervision, overhead, bond, profit, and any other general expense.
  - i) Contractor shall keep and present, in such form as directed, correct amount of cost together with such supporting vouchers as may be required by Department.
- B. If Contractor claims that by any instructions given by Architect / Engineer, Department, by drawings or otherwise, regarding performance of the Work or furnishing of material under Contract, involves extra cost, Contractor shall give Department written notice of cost thereof within two (2) weeks after receipt of such instructions and in any event before proceeding to execute work, unless delay in executing work would endanger life or property.
- C. No claim for extra work or cost shall be allowed unless it was done in pursuance of written Change Order from Architect / Engineer and approved by Department, as previously mentioned, and claim presented with payment request submitted after changed or extra work is completed.
- D. Negotiation of cost for change in the Work shall not be cause for Contractor to delay prosecution of the Work if Contractor has been authorized in writing by Public Works Project Manager to proceed.

## **19. EXTRAS**

- A. Without invalidating Contract, Department may order extra work or make changes by altering, adding to or deducting from the Work, contract sum being adjusted in accordance with Article 18 herein.

## **20. TIME FOR COMPLETION**

- A. Contractor agrees that the Work shall be prosecuted regularly and diligently and complete the Work as stated in Construction Documents.

## **21. CORRECTION OF WORK**

- A. All work, all materials whether incorporated in the Work or not, and all processes of manufacture shall at all times and places be subject to inspection of Architect / Engineer and Public Works Project Manager who shall be judge of quality and suitability of the Work, materials, and processes of manufacture for purposes for which they are used. Should they fail to meet Architect / Engineer's and Public Works Project Manager's approval they shall be reconstructed, made good, replaced or corrected, by Contractor at Contractor's expense. Immediately remove all rejected material from site.
- B. If Contractor defaults or neglects to carry out the Work in accordance with Construction Documents or fails to perform any provision of Contract, Department may, after ten (10) business days' written notice to Contractor and without prejudice to any other remedy County may have, make good such deficiencies. In such case, appropriate Change Order shall be issued deducting from Contractor's payments then or thereafter, cost of correcting such deficiencies, including cost of Architect / Engineer's additional services made necessary by such default, neglect or failure.

## **22. SUBSURFACE CONDITIONS FOUND DIFFERENT**

- A. If Contractor encounters subsurface or latent conditions at site materially differing from those shown on Drawings or indicated in Specifications, Contractor shall immediately give notice to Architect / Engineer and Public Works Project Manager of such conditions before they are disturbed. Architect / Engineer will thereupon promptly investigate conditions, and if Architect / Engineer finds that they materially differ from those shown on Drawings or indicated in Specifications, Architect / Engineer will at once make such changes as necessary, any increase or decrease of cost resulting from such changes to be adjusted in manner provided in above Article 18 entitled "Changes in the Work".

## **23. RIGHT OF DEPARTMENT TO TERMINATE CONTRACT**

- A. In event that any provisions of this Contract are violated by Contractor or by any subcontractors, County may serve written notice upon Contractor and Surety of its intention to terminate Contract, such notice to contain reasons for such intention to terminate Contract, and unless within ten (10) business days after serving of such notice upon Contractor, such violation or delay shall cease and satisfactory arrangement or correction be made, Contract shall, upon expiration of said ten (10) business days, cease and terminate.
- B. In event of any such termination, County shall immediately serve notice thereof upon Surety and Contractor, and Surety shall have right to take over and perform Contract subject to County's approval; provided, however, that if Surety does not commence performance thereof within ten (10) business days from date of mailing to such Surety of notice of termination, County may take over the Work and prosecute same to completion by contract, or by force account, at expense of Contractor; Contractor and Surety shall be liable to County for any excess cost occasioned County thereby, and in such event County may take possession of and utilize in completing the Work, such materials and equipment as may be on the Work site and therefore necessary.

## **24. CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES**

- A. Contractor shall be responsible for Construction Schedule and coordination. Immediately after execution and delivery of Contract and before making first payment, Contractor shall notify all subcontractors to furnish all required information to develop Construction Schedule. Contractor and all subcontractors associated with the Work shall furnish following information from each Division of Specifications:
1. List of construction activities;
  2. Start, finish and time required for completion of each activity;
  3. Sequential relationships between activities;
  4. Identify all long lead-time items, key events, meetings or activities such as required submittals, fabrication and delivery, procurement of materials, installation and testing;
  5. Weekly definition of extent of work and areas of activity for each trade or Subcontract; and
  6. Other information as determined by Public Works Project Manager.
- B. In addition to above requested items, Contractor shall request delivery dates for all County-furnished equipment, materials or labor. This shall include any work handled by Department under separate contracts such as asbestos abatement, air and water balancing, etc. Indicate on Construction Schedule these associated delivery and installation dates.
- C. Progress Reporting:

1. Contractor shall update and publish Construction Schedule on monthly basis. Revisions to Schedule shall be by Contractor and made in same detail as original Schedule and accompanied by explanation of reasons for revision; and shall be subject to approval by Department.
  2. Failure of Contractor to keep Schedule in updated format shall result in County hiring firm specializing in construction schedule development and deducting those costs associated with updating process from payments due Contractor.
  3. Contractor shall submit show actual percentage of each activity completed, estimated future progress, and anticipated completion time.
- D. Responsibility for timely completion requires:
1. Contractor and subcontractors understand that performance of each is interdependent upon performance of others.
  2. Whenever it becomes apparent from current schedule, that phasing or progress completion dates will not be met, Contractor must take some or all following actions at no additional cost to County:
    - a) Increase construction labor in such quantities and crafts as will eliminate backlog of work.
    - b) Increase number of working hours per shift, shifts per working day, working days per week, amount of construction equipment, or any combination of foregoing to eliminate backlog of work.
    - c) Reschedule work (yet remain in conformance with Drawings and Specifications).
  3. Prior to proceeding with any of above actions, Contractor shall notify Public Works Project Manager.
- E. Maintain current Construction Schedule at all times. Revise Construction Schedule in same detail as original and accompany with explanation of reasons for revision. Schedule shall be subject to approval by Architect / Engineer and Public Works Project Manager.

## **25. PAYMENTS TO CONTRACTOR**

- A. Contractor shall provide:
1. Detailed estimate giving complete breakdown of contract price by Specification Division; and
  2. Periodic itemized estimates of work done for purpose of making partial payments thereon.
- B. Submit these estimates for approval first to Architect / Engineer, then to Public Works Project Manager. Costs employed in making up any of these schedules are for determining basis of partial payments and not considered as fixing basis for additions to or deductions from Contract price.
- C. County will make partial payments to Contractor for value, proportionate to amount of Contract, of all labor and material incorporated in the Work during preceding calendar month upon receipt of Application and Certificate for Payment form from Architect / Engineer and approval of Department.
- D. Contractor shall submit for approval first to Architect / Engineer, and then to Public Works Project Manager all Application and Certificate for Payment forms. If requested, Application and Certificate for Payment shall be supported by such additional evidence as may be required, showing Contractor's right to payment claimed.



- E. Application and Certificate for Payment for preparatory work and materials delivered and suitably stored at site to be incorporated into the Work at some future period, will be given due consideration. Requesting payment for materials stored off site, may be rejected, however, if deemed essential for reasons of job progress, protection, or other sufficient cause, requests will be considered, conditional upon submission by Contractor of bills of sale, photographs and such other procedures as will adequately protect County's interest such as storage in bonded warehouse with adequate coverage. If there is any error in payment, Contractor is obligated to notify Department immediately, but no longer than ten (10) business days from receipt of payment.
- F. Payments by County will be due within forty-five (45) business days after receipt by Department of Application and Certificate for Payment.
- G. County will retain five percent (5%) of each Application and Certificate for Payment until final completion and acceptance of all the Work covered by Contract. However, anytime after fifty percent (50%) of the Work has been furnished and installed at site, County will make remaining payments in full if Architect / Engineer and Public Works Project Manager find that progress of the Work corresponds with Construction Schedule. If Architect / Engineer and Public Works Project Manager find that progress of the Work does not correspond with Construction Schedule, County may retain up to ten percent (10%) of each Application and Certificate for Payment for the Work completed.
- H. All material and work covered by partial payments made shall become sole property of County, but this provision shall not be construed as relieving Contractor from sole responsibility for care and protection of materials and work upon which payments have been made, or restoration of any damaged work, or as waiver of right of County to require fulfillment of all of terms of Contract.
- I. County will make final payment within sixty (60) calendar days after final completion of the Work, and will constitute acceptance thereof.
- J. County may make payment in full, including retained percentages and less authorized deductions, upon completion and acceptance of each Division where price is stated separately in Contract.
- K. Every contractor engaged in performance of any contract for Department of Public Works, Highway & Transportation shall submit to this Department, as requested and with final application for payment for work under said contract, affidavit(s) as required to prove that all debts and claims against this Work are paid in full or otherwise satisfied, and give final evidence of release of all liens against the Work and County.

## **26. WITHHOLDING OF PAYMENTS**

- A. County, after having served written notice on said Contractor, may either pay directly any unpaid bills of which Department has written notice, or withhold from Contractor's unpaid compensation sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged; whereupon, payment to Contractor shall be resumed in accordance with terms of this Contract, but in no event shall these provisions be construed to impose any obligations upon County to either Contractor or Contractor's Surety.
- B. In paying any unpaid bills of Contractor, County shall be deemed agent of Contractor, and any payment so made by County, shall be considered as payment made under Contract by

County to Contractor and County shall not be liable to Contractor for any such payment made in good faith.

- C. Contractor shall indemnify, hold harmless and defend Dane County, its boards, commissions, agencies, officers, employees and representatives from all claims growing out of lawful demands of subcontractors, laborers, workers, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in performance of this Contract.
- D. At Department's request, Contractor shall furnish satisfactory evidence that all obligations of nature designated above have been paid, discharged or waived.

## **27. ACCEPTANCE OF FINAL PAYMENT AS RELEASE**

- A. Making of final payment shall constitute waiver of all claims by County except those arising from:
  - 1. Unsettled lien;
  - 2. Faulty or defective work appearing after substantial completion;
  - 3. Failure of the Work to comply with requirements of Construction Documents; or
  - 4. Terms of any special guarantees required by Construction Documents.
- B. Acceptance of final payment shall constitute waiver of all claims by Contractor.

## **28. PAYMENTS BY CONTRACTOR**

- A. Contractor shall pay following not later than fifth (5<sup>th</sup>) business day following each payment received from County:
  - 1. All transportation and utility services rendered;
  - 2. All materials, tools, and other expendable equipment that have been delivered at site of the Work to extent of ninety percent (90%) of cost thereof, and balance of cost thereof when said balance is paid to Contractor; and
  - 3. Each subcontractor, respective amount allowed Contractor because of work performed by subcontractor to extent of subcontractor's interest therein.

## **29. CONTRACT SECURITY**

- A. Contractor shall furnish Performance and Payment Bonds in amount at least equal to one hundred percent (100%) of Contract price as security for faithful performance of this Contract and payment of all persons performing labor on project under this Contract and furnishing materials in connection with this Contract.
- B. Sample Performance and Payment Bonds that Contractor will be required to execute is bound into these Construction Documents. Before construction Contract is consummated, completed Performance and Payment Bonds must be approved by Department.

## **30. ASSIGNMENTS**

- A. Contractor shall not assign whole or any part of this Contract or any moneys due or to become due hereunder without written consent of Department. In case Contractor assigns all or any part of any moneys due or to become due under this Contract, instrument of assignment shall contain clause substantially to effect that it is agreed that right of assignee in and to any moneys due or to become due to Contractor shall be subject to prior claims of all

persons, firms and corporations for services rendered or materials supplied for performance of the Work called for in this Contract.

### **31. MUTUAL RESPONSIBILITY OF CONTRACTORS**

- A. If, through acts of neglect on part of Contractor or any subcontractor shall suffer loss or damage on the Work, Contractor agrees to settle with such subcontractor by agreement or arbitration if such other subcontractor will so settle. If such subcontractor shall assert any claim against County on account of any damage alleged to have been sustained, Department shall notify Contractor, who shall indemnify, hold harmless and defend Dane County, its boards, commissions, agencies, officers, employees and representatives against any such claim.

### **32. SEPARATE CONTRACTS**

- A. Department may award other contracts for the Work and all Contractors shall fully cooperate with each other and carefully adjust their work to that provided under other contracts as may be directed by Department. No Contractor shall commit or permit any act that will interfere with performance of the Work by any other Contractor.
- B. Contractor shall coordinate the Work with those of other Contractors. Cooperation will be required in arrangement for storage of materials and in detailed execution of the Work. Contractor, including subcontractors, shall keep informed of progress and detail work of others and shall notify Architect / Engineer or Department immediately of lack of progress or defective workmanship on part of others. Failure of Contractor to keep informed of the Work progressing on site and failure to give notice of lack of progress or defective workmanship by others shall be construed as acceptance by Contractor of status of the Work as being satisfactory for proper coordination with Contractor's own work.

### **33. SUBCONTRACTS**

- A. Contractor may use services of specialty subcontractors on those parts of the Work that, under normal contracting practices, are performed by specialty subcontractors.
- B. Contractor shall not award any work to any subcontractor without prior approval of Department. Qualifications of subcontractors shall be same as qualifications of Contractor. Request for subcontractor approval shall be submitted to Department fifteen (15) business days before start of subcontractor's work. If subcontractors are changed or added, Contractor shall notify Department in writing.
- C. Contractor shall be as fully responsible to County for acts and omissions of subcontractors, and of persons either directly or indirectly employed by them, as Contractor is for acts and omissions of persons directly employed by Contractor.
- D. Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind subcontractors to Contractor by terms of General Conditions of Contract and other Construction Documents insofar as applicable to work of subcontractors and to give Contractor same power as regards terminating any subcontract that Department may exercise over Contractor under any provision of Construction Documents.
- E. Nothing contained in this Contract shall create any contractual relation between any subcontractor and County.

- F. Contractor shall insert in all subcontracts, Articles 26, 33, 43 and 45, respectively entitled: “Withholding of Payments”, “Subcontracts”, “Affirmative Action Provision and Minority / Women / Disadvantaged Business Enterprises”, and “Minimum Wages”, and shall further require all subcontractors to incorporate physically these same Articles in all subcontracts.

#### **34. PROJECT MANAGER’S AUTHORITY**

- A. Public Works Project Manager shall:
1. Administer and ensure compliance with Construction Documents;
  2. Provide responsible on-site observations of construction and have authority to request work and to stop work whenever necessary to insure proper enforcement of Construction Documents;
  3. Convene and chair project meetings and foreman’s coordination meetings when necessary to coordinate resolution of conflicts between Contractors, Architects, Engineers, Consultants, and Department; and
  4. Check and inspect material, equipment and installation procedures of all trades for proper workmanship and for compliance with Drawings, Specifications and Shop Drawings, permit no material on project site that is not satisfactory and reject work not in compliance with Construction Documents.

#### **35. CONSULTANT’S AUTHORITY**

- A. Architect / Engineer is retained by, and is responsible to Department acting for County.
- B. Architect / Engineer shall determine amount, quality, acceptability, and fitness of several kinds of work and materials that are provided under this Contract and shall decide all questions that may arise in relation to said work and construction thereof.
- C. Architect / Engineer shall decide meaning and intent of any portion of Specifications and of any Drawings where they may be found obscure or be in dispute.
- D. Architect / Engineer shall provide responsible observation of construction. Architect / Engineer has authority to stop the Work whenever such stoppage may be necessary to insure proper execution of Construction Documents.
- E. Architect / Engineer shall be interpreter of conditions of Construction Documents and judge of its performance.
- F. Within reasonable time, Architect / Engineer shall make decisions on all matters relating to progress of the Work or interpretation of Construction Documents.
- G. Architect / Engineer’s decisions are subject to review by Public Works Project Manager.

#### **36. STATED ALLOWANCES**

- A. Stated allowances enumerated in Instructions to Bidders shall cover net cost of materials or equipment, and all applicable taxes. Contractor’s cost of delivery and unloading at site, handling costs on site, labor, installation costs, overhead, profit and any other incidental costs shall be included in Contractor’s bid, but not as part of cash allowance.

- B. Department will solicit at least two (2) bids on materials or equipment for which allowance is stated and select on basis of lowest qualified responsible bid. Contractor will then be instructed to purchase “Allowed Materials”. If actual price for purchasing “Allowed Materials”, including taxes, is more or less than “Cash Allowance”, Contract price shall be adjusted accordingly. Adjustment in Contract price shall not contain any cost items excluded from cash allowance.

### **37. ESTIMATES OF QUANTITIES**

- A. Whenever estimated quantities of work to be done and materials to be furnished under this Contract are shown in any of Construction Documents, they are given for use in comparing bids and right is especially reserved to increase or diminish them as they may be deemed reasonably necessary or desirable by Department to complete the Work included in this Contract, and cost for such increase or diminution shall be adjusted in manner provided for in General Conditions of Contract Article 18 entitled “Changes in the Work”.

### **38. LANDS AND RIGHTS-OF-WAY**

- A. Prior to start of construction, County shall furnish all land and rights-of-way necessary for carrying out and completion of the Work to be performed under this Contract.

### **39. GENERAL GUARANTEE**

- A. Neither final certificate of payment nor any provision in Construction Documents nor partial or entire occupancy of premises by County shall constitute acceptance of work not done in accordance with Construction Documents or relieve Contractor of liability in respect to any expressed warranties or responsibility for faulty materials or workmanship.
  - 1. In no event shall making of any payment required by Contract constitute or be construed as waiver by County of any breach of covenants of Contract or waiver of any default of Contractor and making of any such payment by County while any such default or breach shall exist shall in no way impair or prejudice right of County with respect to recovery of damages or other remedy as result of such breach or default.
- B. Contractor shall remedy and make good all defective workmanship and materials and pay for any damage to other work resulting there from, which appear within period of one (1) year from date of substantial completion, providing such defects are not clearly due to abuse or misuse by County. Department will give notice of observed defects with reasonable promptness.
- C. Guarantee on work executed after certified date of substantial completion will begin on date when such work is inspected and approved by Architect / Engineer’s and Public Works Project Manager.
- D. Where guarantees or warranties are required in sections of Specifications for periods in excess of one (1) year, such longer terms shall apply; however, Contractor’s Performance and Payment Bonds shall not apply to any guarantee or warranty period in excess of one (1) year.

### **40. CONFLICTING CONDITIONS**

- A. Any provision in any of Construction Documents which may be in conflict or inconsistent with any Articles in these General Conditions of Contract or Supplementary Conditions shall be void to extent of such conflict or inconsistency.

- B. In case of ambiguity or conflict between Drawings and Specifications, Specifications shall govern.
- C. Printed dimensions shall be followed in preference to measurements by scale. Large-scale drawings take precedence over small-scale drawings. Dimensions on Drawings and details are subject to field measurements of adjacent work.

#### **41. NOTICE AND SERVICE THEREOF**

- A. Any notice to Contractor from Department relative to any part of this Contract shall be in writing and considered delivered and service thereof completed, when said notice is posted, by certified or registered mail, to Contractor at Contractor's last given address, or delivered in person to said Contractor, or Contractor's authorized representative on the Work.

#### **42. PROTECTION OF LIVES AND HEALTH**

- A. In order to protect lives and health of Contractor's employees under Contract, Contractor shall comply with all pertinent provisions of Wisconsin Administrative Code, Rules of Department of Commerce, relating to Safety and Health.
- B. Contractor alone shall be responsible for safety, efficiency and adequacy of Contractor's tools, equipment and methods, and for any damage that may result from their failure or their improper construction, maintenance or operation.

#### **43. AFFIRMATIVE ACTION PROVISION AND MINORITY / WOMEN / DISADVANTAGED BUSINESS ENTERPRISES**

- A. Affirmative Action Provisions.
  - 1. During term of their Contract, Contractor agrees not to discriminate on basis of race, religion, color, sex, handicap, age, sexual preference, marital status, physical appearance, or national origin against any person, whether recipient of services (actual or potential), employee, or applicant for employment. Such equal opportunity shall include but not be limited to following: employment, upgrading, demotion, transfer, recruitment, advertising, layoff, termination, training, rates of pay, and any other form of compensation or level of service(s). Contractor agrees to post in conspicuous places, these affirmative action standards so as to be visible to all employees, service recipients and applicants for this paragraph. Listing of prohibited bases for discrimination shall not be construed to amend in any fashion state or federal law setting forth additional bases and exceptions shall be permitted only to extent allowable in state or federal law.
  - 2. Contractor is subject to this Article only if Contractor has twenty (20) or more employees and receives \$20,000.00 or more in annual aggregate contracts with County. Contractor shall file and Affirmative Action Plan with Dane County Contract Compliance Specialist in accord with Chapter 19 of Dane County Code of Ordinances. Such plan must be filed within fifteen (15) business days of effective date of this Contract and failure to do so by said date shall constitute ground for immediate termination of Contract by County. Contractor shall also, during term of this Contract, provide copies of all announcements of employment opportunities to County's Office of Equity & Inclusion, and shall report annually number of persons, by race, sex and handicap status, who apply for employment, and, similarly classified, number hired and number rejected.

3. Contact Dane County Contract Compliance Specialist at Dane County Office of Equity & Inclusion, 210 Martin Luther King, Jr. Blvd., Room 356, Madison, WI 53703, 608/266-4192.
  4. In all solicitations for employment placed on Contractor's behalf during term of this Contract, Contractor shall include statement to affect Contractor is "Equal Opportunity Employer". Contractor agrees to furnish all information and reports required by County's Contract Compliance Specialist as same relate to affirmative action and nondiscrimination, which may include any books, records, or accounts deemed appropriate to determine compliance with Chapter 19, Dane County Code of Ordinances, and provision of this Contract.
- B. Minority / Women / Disadvantaged / Emerging Small Business Enterprises.
1. Chapter 19.508 of Dane County Code of Ordinances is official policy of Dane County regarding utilization of, to fullest extent of, Minority Business Enterprises (MBEs), Women Business Enterprises (WBEs) Disadvantage Business Enterprises (DBEs) and Emerging Small Business Enterprises (ESBEs).
  2. Contractor may utilize MBEs / WBEs / DBEs / ESBEs as subcontractors or suppliers. List of subcontractors will be required of low bidder as stated in this Contract. List shall indicate which are MBEs / WBEs / DBEs / ESBEs and percentage of subcontract awarded, shown as percentage of total dollar amount of bid.

#### **44. COMPLIANCE WITH FAIR LABOR STANDARDS**

- A. During term of this Contract, Contractor shall report to County Contract Compliance Specialist, within ten (10) business days, any allegations to, or findings by National Labor Relations Board (NLRB) or Wisconsin Employment Relations Commission (WERC) that Contractor has violated statute or regulation regarding labor standards or relations. If investigation by Contract Compliance Specialist results in final determination that matter adversely affects Contractor's responsibilities under this Contract, and which recommends termination, suspension or cancellation of this Contract, County may take such action.
- B. Contractor may appeal any adverse finding by Contract Compliance Specialist as set forth in Dane County Ordinance 25.015(11)(c) through (e).
- C. Contractor shall post this statement in prominent place visible to employees: "As condition of receiving and maintaining contract with Dane County, this employer shall comply with federal, state and all other applicable laws prohibiting retaliation or union organizing."

#### **45. DOMESTIC PARTNERSHIP BENEFITS**

- A. Not Used.

#### **46. USE AND OCCUPANCY PRIOR TO ACCEPTANCE**

- A. Contractor agrees to use and occupancy of portion or unit of the Work before formal acceptance by Department, provided Department:
1. Secures written consent of Contractor; except when in opinion of Public Works Project Manager, Contractor is chargeable with unwarranted delay in final cleanup of punch list items or other Contract requirements.
  2. Secures endorsement from insurance carrier and consent of Surety permitting occupancy of building or use of the Work during remaining period of construction, or, secures consent of Surety.

3. Assumes all costs and maintenance of heat, electricity and water.
4. Accepts all work completed within that portion or unit of the Work to be occupied, at time of occupancy.

#### **47. MINIMUM WAGES**

- A. Contractor shall post, at appropriate conspicuous point on site of project, schedule showing all determined minimum wage rates for various classes of laborers and mechanics to be engaged in the Work under this Contract and all deductions, if any, required by law to be made from unpaid wages actually earned by laborers and mechanics so engaged.
- B. Supplementary Conditions section in Construction Documents lists wage determinations required by State Law.
- C. If, after award of Contract, it becomes necessary to employ any person in trade or occupation not classified in wage determinations, such person shall be paid at not less than such rate as shall be determined by Wisconsin Department of Workforce Development. Such approved minimum rate shall be retroactive to time of initial employment of such person in such trade or occupation. Contractor shall notify Department of Contractor's intention to employ persons in trades or occupations not so classified in sufficient time for Department to obtain approved rates for such trades or occupations.
- D. Specified wage rates are minimum rates only, and Department will not consider any claims for additional compensation made by Contractor because of payment by Contractor of any wage rate in excess of applicable rate contained in this Contract. Contractor shall adjust any disputes in regard to payment of wages in excess of those specified in this Contract.

#### **48. CLAIMS**

- A. No claim may be made until Department's Deputy Public Works Director has reviewed Architect / Engineer's decision as provided for in Article 35 of General Conditions of Contract. If any claim remains unresolved after such review by Department's Deputy Public Works Director, the claim may be filed under Wisconsin Statute 893.80. Work shall progress during period of any dispute or claim. Unless specifically agreed between parties, venue will be in Dane County, Wisconsin.

#### **49. ANTITRUST AGREEMENT**

- A. Contractor and County recognize that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by County. Therefore, Contractor hereby assigns to County any and all claims for such overcharges as to goods and materials purchased in connection with this Contract, except as to overcharges which result from antitrust violations commencing after price is established under this Contract and any change order thereto.

#### **50. INSURANCE**

- A. Contractor Carried Insurance:
  1. Contractor shall not commence work under this Contract until Contractor has obtained all insurance required under this Article and has provided evidence of such insurance to Risk Manager, 425 City-County Building, 210 Martin Luther King Jr. Blvd., Madison, WI 53703. Contractor shall not allow any subcontractor to commence work until insurance



- required of subcontractor has been so obtained and approved. Company providing insurance must be licensed to do business in Wisconsin.
2. Worker's Compensation Insurance:
    - a) Contractor shall procure and shall maintain during life of this Contract, Worker's Compensation Insurance as required by statute for all of Contractor's employees engaged in work at site of project under this Contract and, in case of any such work sublet, Contractor shall require subcontractor similarly to provide Worker's Compensation Insurance for all of latter's employees to be engaged in such work unless such employees are covered by protection afforded by Contractor's Worker's Compensation Insurance.
    - b) If any claim of employees engaged in hazardous work on project under this Contract is not protected under Worker's Compensation Statute, Contractor shall provide and shall cause each subcontractor to provide adequate Employer's Liability Insurance for protection of such of Contractor's employees as are not otherwise protected.
  3. Contractor's Public Liability and Property Damage Insurance:
    - a) Contractor shall procure and maintain during life of this Contract, Contractor's Public Liability Insurance and Contractor's Property Damage Insurance in amount not less than \$1,000,000 bodily injury, including accidental death, to any one person, and subject to same limit for each person, in amount not less than \$1,000,000 on account of one accident, and Contractor's Property Damage Insurance in amount not less than \$1,000,000 or combined single limit of at least \$1,000,000 with excess coverage over and above general liability in amount not less than \$5,000,000. Contractor shall add "Dane County" as additional insured for each project.
    - b) Contractor's Public Liability and Property Damage Insurance shall include Products, Completed Operation, and Contractual Liability under Insurance Contract. "Contractor shall in all instances save, defend, indemnify and hold harmless County and Architect / Engineer against all claims, demands, liabilities, damages or any other costs which may accrue in prosecution of the Work and that Contractor will save, defend, indemnify and hold harmless County and Architect / Engineer from all damages caused by or as result of Contractor's operations" and each shall be listed as additional insured on Contractor's and subcontractors' insurance policies.
    - c) Obligations of Contractor under Article 50.A.2.b) shall not extend to liability of Architect / Engineer, agents or employees thereof, arising out of:
      - 1) Preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications; or
      - 2) Giving of or failure to give directions or instructions by Architect / Engineer, agents or employees thereof provided such giving or failure to give is primary cause of injury or damage.
    - d) Contractor shall procure and shall maintain during life of this Contract, Comprehensive Automobile Liability Insurance covering owned, non-owned and hired automobiles for limits of not less than \$1,000,000 each accident single limit, bodily injury and property damage combined with excess coverage over and above general liability in amount not less than \$5,000,000.
    - e) Contractor shall either:
      - 1) Require each subcontractor to procure and to maintain during life of subcontract, subcontractor's Public Liability Property Damage Insurance, and Comprehensive Automobile Liability Insurance of type and in same amount specified in preceding paragraphs; or
      - 2) Insure activities of subcontractors in Contractor's own policy.
  4. Scope of Insurance and Special Hazards: Insurance required under Article 50.A.2 & 50.A.3. hereof shall provide adequate protection for Contractor and subcontractors, respectively, against damage claims which may arise from operations under this Contract, whether such operation be by insured or by anyone directly or indirectly employed by

insured and also against any of special hazards which may be encountered in performance of this Contract as enumerated in Supplementary Conditions.

5. Proof of Carriage of Insurance: Contractor shall furnish Risk Manager with certificates showing type, amount, class of operations covered, effective dates, dates of expiration of policies and "Dane County" listed as additional insured. Such certificates shall also contain (substantially) following statement: "Insurance covered by this certificate will not be canceled or materially altered, except after ten (10) business days written notice has been received by Risk Manager."

**B. Builder's Risk:**

1. County shall provide Builder's Risk insurance coverage for its insurable interests in construction or renovation projects with completed value of \$1,000,000 or less. Therefore, if project completed value is more than \$1,000,000, Contractor shall obtain and maintain in force, at its own expense, Builder's Risk Insurance on all risks for amount equal to full completed value of covered structure or replacement value of alterations or additions. Any deductible shall not exceed \$25,000 for each loss. Policy shall include occupancy clause and list Dane County as loss payee.

**C. Indemnification / Hold Harmless:**

1. Contractor shall indemnify, hold harmless and defend Dane County, its boards, commissions, agencies, officers, employees and representatives from and against all claims, damages, losses and expenses including attorneys' fees arising out of or resulting from performance of the Work, provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, and is caused in whole or in part by any act or omission of Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by part indemnified hereunder.
2. In any and all claims against Dane County, its boards, commissions, agencies, officers, employees and representatives or by any employee of Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, indemnification obligation under this Contract shall not be limited in any way by any limitation on amount or type of damages, compensation or benefits payable by or for Contractor or any subcontractor under worker's compensation acts, disability benefits or other employee benefit acts.
3. Obligations of Contractor under this Contract shall not extend to liability of Architect / Engineer, its agents or employees arising out of:
  - a) Preparation or approval of maps, drawings, opinion, reports, surveys, change orders, designs or specifications; or
  - b) Giving of or failure to give directions or instruction by Architect / Engineer, its agents or employees provided such giving or failure to give is primary cause of injury or damage.
4. Dane County shall not be liable to Contractor for damages or delays resulting from work by third parties or by injunctions or other restraining orders obtained by third parties.

**51. WISCONSIN LAW CONTROLLING**

- A. It is expressly understood and agreed to by parties hereto that in event of any disagreement or controversy between parties, Wisconsin law shall be controlling.


END OF SECTION

SECTION 00 73 00

SUPPLEMENTARY CONDITIONS

1. APPLICATION & CERTIFICATE FOR PAYMENT

- A. Every contractor engaged in performance of any contract for Department of Public Works, Highway & Transportation shall submit partial and final Application & Certificate for Payment for work under said contract. Form shall provide similar information as shown on AIA G702™ and G703™ forms (samples shown below). Forms shall be submitted to project Architect / Engineer and Public Works Project Manager for approval.


**AIA Document G702™ – 1992**

**Application and Certificate for Payment**

TO OWNER:	PROJECT:	APPLICATION NO:	Distribution to:
FROM CONTRACTOR:	VIA ARCHITECT:	PERIOD TO:	OWNER <input type="checkbox"/>
		CONTRACT FOR:	ARCHITECT <input type="checkbox"/>
		CONTRACT DATE:	CONTRACTOR <input type="checkbox"/>
		PROJECT NOS:	FIELD <input type="checkbox"/>
			OTHER <input type="checkbox"/>

---

**CONTRACTOR'S APPLICATION FOR PAYMENT**  
Application is made for payment, as shown below, in connection with the Contract. AIA Document G703™, Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM ..... \$ \_\_\_\_\_
2. NET CHANGE BY CHANGE ORDERS ..... \$ \_\_\_\_\_
3. CONTRACT SUM TO DATE (Line 1 + 2) ..... \$ \_\_\_\_\_
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) ..... \$ \_\_\_\_\_
5. RETAINAGE:
  - a. \_\_\_\_\_% of Completed Work  
(Column D + E on G703) ..... \$ \_\_\_\_\_
  - b. \_\_\_\_\_% of Stored Material  
(Column F on G703) ..... \$ \_\_\_\_\_
- Total Retainage (Lines 5a + 5b, or Total in Column I of G703) ..... \$ \_\_\_\_\_
6. TOTAL EARNED LESS RETAINAGE ..... \$ \_\_\_\_\_  
(Line 4 minus Line 5 Total)
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT ..... \$ \_\_\_\_\_  
(Line 6 from prior Certificate)
8. CURRENT PAYMENT DUE ..... \$ \_\_\_\_\_
9. BALANCE TO FINISH, INCLUDING RETAINAGE ..... \$ \_\_\_\_\_  
(Line 3 minus Line 6)

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$ _____	\$ _____
Total approved this month	\$ _____	\$ _____
<b>TOTAL</b>	<b>\$ _____</b>	<b>\$ _____</b>
<b>NET CHANGES by Change Order</b>	<b>\$ _____</b>	<b>\$ _____</b>

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR: \_\_\_\_\_ Date: \_\_\_\_\_

By: \_\_\_\_\_  
State of: \_\_\_\_\_  
Country of: \_\_\_\_\_  
Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_

Notary Public: \_\_\_\_\_  
My commission expires: \_\_\_\_\_

---

**ARCHITECT'S CERTIFICATE FOR PAYMENT**  
In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED ..... \$ \_\_\_\_\_  
(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT: \_\_\_\_\_  
By: \_\_\_\_\_ Date: \_\_\_\_\_

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

**CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.**  
 AIA Document G702™ – 1992. Copyright © 1953, 1963, 1965, 1971, 1978, 1983 and 1992 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. Purchasers are permitted to reproduce ten (10) copies of this document when completed. To report copyright violations of AIA Contract Documents, e-mail The American Institute of Architects' legal counsel, [copyright@aia.org](mailto:copyright@aia.org).

# AIA<sup>®</sup> Document G703<sup>™</sup> – 1992

## Continuation Sheet

AIA Document G702<sup>™</sup>-1992, Application and Certificate for Payment, or G732<sup>™</sup>-2009, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.  
 In tabulations below, amounts are in US dollars.  
 Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:  
 APPLICATION DATE:  
 PERIOD TO:  
 ARCHITECT'S PROJECT NO.:

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED <i>(Not in D or E)</i>	G TOTAL COMPLETED AND STORED TO DATE <i>(D+E+F)</i>	H BALANCE TO FINISH <i>(C-G)</i>	I RETAINAGE <i>(if variable rate)</i>
			D FROM PREVIOUS APPLICATION <i>(D-E)</i>	E THIS PERIOD				
GRAND TOTAL								

**CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.**

AIA Document G703<sup>™</sup> – 1992. Copyright © 1963, 1965, 1966, 1967, 1970, 1978, 1983 and 1992 by The American Institute of Architects. All rights reserved. WARNING: This AIA<sup>®</sup> Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA<sup>®</sup> Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. Purchasers are permitted to reproduce ten (10) copies of this document when completed. To report copyright violations of AIA Contract Documents, e-mail The American Institute of Architects' legal counsel, [copyright@aia.org](mailto:copyright@aia.org). 10-200304

END OF SECTION



Department of Public Works, Highway & Transportation  
**Public Works Engineering Division**

608/266-4018

Gerald J. Mandli, P.E.  
**Commissioner / Director**

Joseph T. Parisi  
**County Executive**

**Deputy Director**  
Todd Draper

1919 Alliant Energy Center Way  
Madison, Wisconsin 53713  
Fax: 608/267-1533  
[www.countyofdane.com/pwht/public\\_works.aspx](http://www.countyofdane.com/pwht/public_works.aspx)

## **BEST VALUE CONTRACTING APPLICATION**

### **CONTRACTORS / LICENSURE APPLICANTS**

The Dane County Department of Public Works requires contractors & subcontractors to be a Best Value Contractor before being hired. Contractor & subcontractor application documents should be turned in immediately. Contractor approval or exemption must be complete prior to Bid Due Date / Time. All subcontractors must also be approved or prove their exemption before performing any work under a County contract. This document shall be completed, properly executed, along with the necessary attachments and additional information that the County requires for the protection and welfare of the public in the performance of a County contract.

Contractors or subcontractors of any tier who attain qualification status will retain that status for a period of two (2) years from the date of qualification. Contractors shall notify the Dane County Department of Public Works, Highway & Transportation within fifteen (15) days of any changes to its business or operations that are relevant to the application. Failure to do so could result in suspension, revocation of the contractor's qualification, debarment from County contracts for up to three (3) years and / or other sanctions available under the law.

No contracts will be awarded for construction work performed on Dane County projects unless the contractor is currently approved as a Wisconsin Trade Trainer or has applied for approval as an Apprenticeship Trade Trainer to the Wisconsin Department of Workforce Development and agrees to an acceptable apprenticeship program. If you are not currently approved as a Wisconsin Trade Trainer, or have not applied for approval as an Apprenticeship Trade Trainer, please contact the Department of Workforce Development - Bureau of Apprenticeship Standards at 608/266-3133 or visit their web site at: <https://dwd.wisconsin.gov/apprenticeship/>.

### **EXEMPTIONS**

- Contractors who employ less than five (5) apprenticeable trade workers are not required to qualify.
- Contractors performing work that does not apply to an apprenticeable trade, as outlined in Appendix A.
- The contractor / subcontractor provides sufficient documentation to demonstrate one or more of the following:
  - apprentices are not available in a specific geographic area;
  - the applicable apprenticeship program is unsuitable or unavailable; or
  - there is a documented depression of the local construction market which prevents compliance.

SEC.	PROOF OF RESPONSIBILITY	CHECK IF APPLICABLE
1	Does your firm possess all technical qualifications and resources, including equipment, personnel and financial resources, necessary to perform the work required for any project or obtain the same through the use of responsible, qualified subcontractors?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
2	Will your firm possess all valid, effective licenses, registrations or certificates required by federal, state, county, or local law, which are necessary for the type of work to be performed including, but not limited to, those for any type of trade work or specialty work?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
3	Will your firm meet all bonding requirements as required by applicable law or contract specifications?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
4	Will your firm meet all insurance requirements as required by applicable law or specifications, including general liability insurance, workers compensation insurance and unemployment insurance requirements?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
5	Will your firm maintain a substance abuse policy for employees hired for public works contracts that comply with Wis. Stats. Sec. 103.503?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
6	Will your firm fully abide by the equal opportunity and affirmative action requirements of all applicable laws, including County ordinances?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
7	In the past three (3) years, has your firm had control or has another corporation, partnership or other business entity operating in the construction industry controlled it? If so, please attach a statement explaining the nature of the firm relationship?	Yes: <input type="checkbox"/> No: <input type="checkbox"/> If Yes, attach details.
8	In the past three (3) years, has your firm had any type of business, contracting or trade license, certification or registration revoked or suspended?	Yes: <input type="checkbox"/> No: <input type="checkbox"/> If Yes, attach details.
9	In the past three (3) years, has your firm been debarred by any federal, state or local government agency?	Yes: <input type="checkbox"/> No: <input type="checkbox"/> If Yes, attach details.
10	In the past three (3) years, has your firm defaulted or failed to complete any contract?	Yes: <input type="checkbox"/> No: <input type="checkbox"/> If Yes, attach details.
11	In the past three (3) years, has your firm committed a willful violation of federal, state or local government safety laws as determined by a final decision of a court or government agency authority.	Yes: <input type="checkbox"/> No: <input type="checkbox"/> If Yes, attach details.
12	In the past three (3) years, has your firm been in violation of any law relating to your contracting business where the penalty for such violation resulted in the imposition of a penalty greater than \$10,000?	Yes: <input type="checkbox"/> No: <input type="checkbox"/> If Yes, attach details.
13	Is your firm an active Wisconsin Trade Trainer as determined by the Wisconsin Bureau of Apprenticeship Standards?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
14	Is your firm exempt from being qualified with Dane County?	Yes: <input type="checkbox"/> No: <input type="checkbox"/> If Yes, attach reason for exemption.
15	Does your firm acknowledge that in doing work under any County Public Works Contract, it will be required to use as subcontractors only those contractors that are also qualified with the County or become so within five (5) days after the Bid Due Date?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
16	Contractor has been in business less than one year?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>
17	Is your firm a first time Contractor requesting a one time exemption, but, intend to comply on all future contracts and are taking steps typical of a "good faith" effort?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>

## SIGNATURE SECTION

Your firm's Officer, or the individual who would sign a bid and / or contract documents must sign this document.

I do hereby certify that all statements herein contained are true and correct to the best of my knowledge:

Signature: \_\_\_\_\_

(Application is invalid without signature)

Print Name: \_\_\_\_\_ Date: \_\_\_\_\_

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

NAME AND ADDRESS OF CONTRACTOR	
Name of Firm:	
Address:	
City, State, Zip:	
Phone Number:	
Fax Number:	
E-mail Address:	

## REMEMBER!

**RETURN ALL TO FORMS AND ATTACHMENTS, OR QUESTIONS TO:**

**TODD DRAPER  
EMAIL: DRAPER@COUNTYOFDANE.COM  
OFFICE: (608) 267-0119, FAX: (608) 267-1533**

**DANE COUNTY DEPARTMENT OF PUBLIC WORKS, HIGHWAY & TRANSPORTATION  
1919 ALLIANT ENERGY CENTER WAY  
MADISON, WI 53713**

## APPENDIX A

### APPRENTICEABLE TRADES:

- Bricklayer
- Carpenter
- Cement Mason (Concrete Finisher)
- Cement Mason (Heavy Highway)
- Construction Craft Laborer
- Data Communications Installer
- Electrician
- Elevator Mechanic / Technician
- Environmental Systems Technician / HVAC Service Technician / HVAC Install & Service
- Glazier
- Heavy Equipment Operator / Operating Engineer
- Insulation Worker (Heat & Frost)
- Iron Worker (Assembler, Metal Buildings)
- Painter / Decorator
- Plasterer
- Plumber
- Roofer / Waterproofer
- Sheet Metal Worker
- Sprinkler Fitter
- Steamfitter (Service & Refrigeration)
- Taper & Finisher
- Telecommunications (Voice, Data & Video) Installer / Technician
- Tile Setter

END OF SECTION



SECTION 00 73 11

FAIR LABOR PRACTICES CERTIFICATION

The undersigned, for and on behalf of the BIDDER, APPLICANT or PROPOSER named herein, certifies as follows:

A. That he or she is an officer or duly authorized agent of the above-referenced BIDDER, APPLICANT or PROPOSER, which has a submitted a bid, application or proposal for a contract or agreement with the county of Dane.

B. That BIDDER, APPLICANT or PROPOSER has (check one):

\_\_\_\_\_ not been found by the National Labor Relations Board (“NLRB”) or the Wisconsin Employment Relations Commission (“WERC”) to have violated any statute or regulation regarding labor standards or relations in the seven years prior to the signature date of this Certification.

\_\_\_\_\_ been found by the National Labor Relations Board (“NLRB”) or the Wisconsin Employment Relations Commission (“WERC”) to have violated any statute or regulation regarding labor standards or relations in the seven years prior to the signature date of this Certification.

\_\_\_\_\_  
Officer or Authorized Agent Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed or Typed Name and Title

\_\_\_\_\_  
Printed or Typed Business Name

**NOTE:** You can find information regarding the violations described above at: [www.nlrb.gov](http://www.nlrb.gov) and [werc.wi.gov](http://werc.wi.gov).

For reference, Dane County Ordinance 25.09 is as follows:

(1) BIDDER RESPONSIBILITY. (a) Any bid, application or proposal for any contract with the county, including public works contracts regulated under chapter 40, shall include a certification indicating whether the bidder has been found by the National Labor Relations Board (NLRB) or the Wisconsin Employment Relations Committee (WERC) to have violated any statute or regulation regarding labor standards or relations within the last seven years. The Controller shall investigate any such finding and make a recommendation to the committee, which shall determine whether the conduct resulting in the finding affects the bidder’s responsibility to perform the contract.

**If you indicated that the NLRB or WERC have found you to have such a violation, you must include copies of any relevant information regarding such violation with your proposal, bid or application.**

Include this completed Certification with your bid, application or proposal.

END OF SECTION

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SECTION 01 00 00

GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Summary
  2. Summary of the Work
  3. Contractor Use of Premises
  4. Applications for Payment
  5. Change Procedures
  6. Alternates
  7. Lump Sum Allowances for Work
  8. Coordination
  9. Cutting and Patching
  10. Conferences
  11. Progress Meetings
  12. Job Site Administration
  13. Submittal Procedures
  14. Proposed Products List
  15. Shop Drawings
  16. Product Data
  17. Samples
  18. Manufacturers' Instructions
  19. Manufacturers' Certificates
  20. Quality Assurance / Quality Control of Installation
  21. References
  22. Interior Enclosures
  23. Protection of Installed Work
  24. Parking
  25. Staging Areas
  26. Occupancy During Construction and Conduct of Work
  27. Protection
  28. Progress Cleaning
  29. Products
  30. Transportation, Handling, Storage and Protection
  31. Product Options
  32. Substitutions
  33. Starting Systems
  34. Demonstration and Instructions
  35. Contract Closeout Procedures
  36. Final Cleaning
  37. Adjusting
  38. Operation and Maintenance Data
  39. Spare Parts and Maintenance Materials

#### 40. As-Built and Record Drawings and Specifications

### 1.2 SUMMARY OF THE WORK

- A. Project Description: Perform the Work as specified and detailed in Construction Documents package. Contractor to provide construction services of the full renovation of an existing facility, and addition of a garage, and site work.
- B. Work by Owner: Not applicable.
- C. Permits: Prior to commencement of the Work, Contractor to secure any and all necessary permits for completion of the Work and facility occupancy. Provide Public Works Project Manager with copies of all permits.
- D. Diggers Hotline:
  - 1. It is General Contractor's responsibility to contact Diggers Hotline to have all utility locations marked prior to excavation and planning excavation so as not to delay the Work.
  - 2. Diggers Hotline shall also be used to obtain information on safe working clearances from overhead lines.
  - 3. Completely comply with all requirements of each affected utility company.
  - 4. It is General Contractor's responsibility to contact & hire private utility locating services if necessary.

### 1.3 CONTRACTOR USE OF PREMISES

- A. Limit use of premises to allow work by Contractors or Subcontractors and access by Owner.
- B. Coordinate utility outages and shutdowns with Owner.
- C. Contractors or Subcontractors shall not visit the site if they are or have recently been ill.

### 1.4 APPLICATIONS FOR PAYMENT

- A. Submit each Application for Payment on AIA G702™ and G703™ forms or approved contractors invoice form. Contractor shall have these forms notarized and signed.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Payment Period: Monthly.
- D. Submit Applications for Payment to Architect / Engineer electronically for initial approval. Architect / Engineer will forward approved copies to Public Works Project Manager who will also approve & process for payment.

## 1.5 CHANGE PROCEDURES

- A. Refer to General Conditions of Contract; 18. CHANGES IN THE WORK.
- B. Contractors shall provide Change Order Proposals on a form bearing the firm's letterhead. Contract Change Orders will be executed on forms provided by Dane County

## 1.6 ALTERNATES

- A. Alternates quoted on Bid Form shall be reviewed and accepted or rejected at Owner's option.
- B. Coordinate related work and modify surrounding work as required.
- C. Schedule of Alternates: Not Applicable.

## 1.7 LUMP SUM ALLOWANCES FOR WORK

- A. Not applicable.

## 1.8 COORDINATION

- A. Coordinate scheduling, submittals, and work of various sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify utility requirement characteristics of operating equipment are compatible with building utilities.
- C. Coordinate space requirements and installation of mechanical and electrical work that are indicated diagrammatically on Drawings.
- D. Refer to Drawings for recommended work sequence and duration.
- E. Contractor shall provide Public Works Project Manager with work plan that ensures the Work will be completed within required time of completion.
- F. Public Works Project Manager may choose to photograph or videotape site or workers as the Work progresses.

## 1.9 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching new work; restore work with new Products.
- B. Submit written request in advance of cutting or altering structural or building enclosure elements.

- C. Fit work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- D. Refinish surfaces to match adjacent finishes.
- E. New work in extension of existing work shall correspond in all respects with that to which it connects or similar existing work unless otherwise indicated or specified.
  - 1. Existing work shall be cut, altered, removed or replaced as necessary for performance of Contract obligations.
  - 2. Work remaining in place, damaged or defaced by reason of work done under this Contract shall be restored equal to its condition at time of Award of Contract.
  - 3. If removal of work exposes discolored or unfinished surfaces or work out of alignment, such surfaces shall be refinished or materials replaced as necessary to make continuous work uniform and harmonious.

#### 1.10 CONFERENCES

- A. Project shall have pre-bid conference; see Instructions to Bidders.
- B. Owner will schedule preconstruction conference after Award of Contract for all affected parties.
- C. Contractor shall submit Construction Schedule at pre-construction meeting.
- D. When required in individual Specification section, convene pre-installation conference at project site prior to commencing work of Section.
- E. Safe distancing & face masks are required for all conference attendees. Conferences may be limited to 10 people; please limit number of attending staff & subcontractors. Accommodation shall be made to encourage the use of teleconference or videoconference meetings to the greatest extent possible.

#### 1.11 PROGRESS MEETINGS

- A. Day & time of progress meetings to be determined at pre-construction meeting.
- B. Contractor shall schedule and administer meetings throughout progress of the Work at minimum of one (1) per every two weeks, at time TBD with Public Works Project Manager, involved Dane County staff & other individuals as required.
- C. Contractor shall preside at meetings, record minutes, and distribute copies within two (2) business days to those affected by decisions made.
- D. Contractors shall give verbal reports of progress on the Work, discuss schedule for upcoming period and present all conflicts, discrepancies or other difficulties for resolution.
- E. In-person meetings shall be limited & shall follow current *Public Health - Madison & Dane County* procedures & recommendations (see

[publichealthmdc.com/documents/office\\_space\\_checklist.pdf](http://publichealthmdc.com/documents/office_space_checklist.pdf) and [publichealthmdc.com/coronavirus/forward-dane/current-order](http://publichealthmdc.com/coronavirus/forward-dane/current-order)). Whenever possible, meetings shall be held via teleconference or videoconference, to be hosted by contractor or consultant. Dane County reserves right to mandate safe physical distancing & use of face masks by all personnel while inside any County facility or on any County grounds.

#### 1.12 JOB SITE ADMINISTRATION

- A. Contractor shall provide project site supervision at all times when Work is being performed on site.
- B. Contractor shall not change their project superintendent or project manager for duration of the Work without written permission of Public Works Project Manager.
- C. Contractor is responsible for ensuring the security of the site until the facility is turned over to the Owner for beneficial use.

#### 1.13 SUBMITTAL PROCEDURES

- A. Submittal form to identify Project, Contractor, Subcontractor or supplier; and pertinent Construction Documents references.
- B. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction work, and coordination of information is in accordance with requirements of the Work and Construction Documents.
- C. Identify variations from Construction Documents and Product or system limitations that may be detrimental to successful performance of completing the Work.
- D. Revise and resubmit submittals as required; identify all changes made since previous submittal.

#### 1.14 PROPOSED PRODUCTS LIST

- A. Unless an alternate period is agreed upon with Public Works Project Manager, contractor shall submit within fifteen (15) business days after date of Award of Contract, a complete list of major Products proposed for use, with name of manufacturer, trade name, and model number of each Product.

#### 1.15 SHOP DRAWINGS

- A. Submit number of copies that Contractor requires, plus three (3) copies that shall be retained by Public Works Project Manager.

#### 1.16 PRODUCT DATA

- A. Submit number of copies that Contractor requires, plus two (2) copies that shall be retained by Public Works Project Manager.

- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturer's standard data to provide information unique to this Project.

#### 1.17 SAMPLES

- A. Submit samples to illustrate functional and aesthetic characteristics of Product.
- B. Submit samples of finishes from full range of manufacturers' standard colors, textures, and patterns for Architect / Engineer and Public Works Project Manager's selection.

#### 1.18 MANUFACTURERS' INSTRUCTIONS

- A. When specified in individual Specification sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

#### 1.19 MANUFACTURERS' CERTIFICATES

- A. When specified in individual Specification sections, submit manufacturers' certificate to Public Works Project Manager for review, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

#### 1.20 QUALITY ASSURANCE / QUALITY CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply fully with manufacturers' instructions.
- C. Comply with specified standards as minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

#### 1.21 REFERENCES

- A. Conform to reference standard by date of issue current as of date for receiving bids.
- B. Should specified reference standard conflict with Construction Documents, request clarification from Public Works Project Manager before proceeding.

#### 1.22 INTERIOR ENCLOSURES

- A. Provide temporary partitions as required to separate work areas from Owner occupied areas, to prevent distribution of dust and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.



1.23 PROTECTION OF INSTALLED WORK

- A. Protect installed work and provide special protection where specified in individual Specification sections. Any Work in place damaged due to negligence of Contractor or Subcontractor will be subject to replacement and/or repair at the discretion of the Architect / Engineer or Public Works Project Manager.

1.24 PARKING

- A. All contractors and their employees shall cooperate with General Contractor and others in parking of vehicles to avoid interference with normal operations and construction activities.

1.25 STAGING AREAS

- A. Contractor may utilize the site for staging in a manner deemed fit so as not to interfere with the progress of Work

1.26 OCCUPANCY DURING CONSTRUCTION AND CONDUCT OF WORK

- A. Owner will not be occupying the facility during period when the Work is in progress. Work may be performed during the hours allowable by local ordinance.
- B. All construction material, salvage material, equipment, etc. shall be secured at day's end.
- C. Contractors are asked to not work at facility if they are ill with something contagious.
- D. Smoking is prohibited on Dane County property.
- E. Owner reserves right at any time to dismiss from premises any Contractor or construction personnel that do not uphold requirements of this Section.
- F. Owner shall not be held liable for any lost time, wages, or impacts to construction schedule by any Contractor or construction personnel dismissed for failure to uphold requirements of this Section.
- G. Contractor is responsible for providing & maintaining temporary toilet facilities.
- H. Contractor & subcontractors shall follow all current *Public Health - Madison & Dane County* procedures & recommendations (see [publichealthmdc.com/documents/office\\_space\\_checklist.pdf](http://publichealthmdc.com/documents/office_space_checklist.pdf) and [publichealthmdc.com/coronavirus/forward-dane/current-order](http://publichealthmdc.com/coronavirus/forward-dane/current-order)). Dane County reserves right to mandate safe physical distancing & use of face masks by all personnel while inside any County facility or on any County grounds.

#### 1.27 PROTECTION

- A. Contractor shall protect from damage / injury all trees, shrubs, hedges, plantings, grass, mechanical, electrical & plumbing equipment, walks and driveways and pay for any damage to same resulting from insufficient or improper protection.
- B. Contractor shall provide and maintain barricades & signage to prohibit public access to construction site.
- C. Contractor shall provide and maintain guard lights at all barricades, railings, obstructions in streets, roads or sidewalks and at all trenches adjacent to public walks or roads.

#### 1.28 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.

#### 1.29 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components specifically identified for reuse.
- B. Do not use materials and equipment removed from existing premises, except as specifically identified or allowed by Construction Documents.

#### 1.30 TRANSPORTATION, HANDLING, STORAGE AND PROTECTION

- A. Transport, handle, store and protect Products in accordance with manufacturer's instructions.

#### 1.31 PRODUCT OPTIONS

- A. Where definite material is specified, it is not intentional to discriminate against "equal" product made by another manufacturer. Intention is to set definite standard of material quality. Should bidder choose to bid materials other than those specified, bidder shall submit said materials specifications to Public Works Project Manager for approval at least seven (7) business days prior to Bid Due Date.
- B. Products and materials that are not specified, but have been approved for use by Public Works Project Manager shall be identified in addenda to all bidding contractors.

#### 1.32 SUBSTITUTIONS

- A. Public Works Project Manager may consider requests for Substitutions only within fifteen (15) calendar days after date of Public Works Construction Contract.

- B. Document each request with complete data substantiating compliance of proposed Substitution with Construction Documents.
- C. Substitutions shall not increase contract price established at Bid Due Date.

#### 1.33 STARTING SYSTEMS

- A. Provide written notification prior to start-up of each equipment item or system.
- B. Ensure that each piece of equipment or system is ready for operation.
- C. Execute start-up under supervision of responsible persons in accordance with manufacturers' instructions.
- D. Submit written report that equipment or system has been properly installed and is functioning correctly.
- E. Contractor and Subcontractors shall cooperate with Commissioning Agent hired by Dane County in the efforts of pre-functional testing or start up procedures as necessary to commission new equipment.

#### 1.34 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel prior to date of final inspection.
- B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at designated location.
- C. Contractor shall videotape or record demonstration sessions at Owner's request; demonstration and demonstrator shall be to level of satisfaction of Owner.

#### 1.35 CONTRACT CLOSEOUT PROCEDURES

- A. Submit written certification that Construction Documents have been reviewed, the Work has been inspected, and the Work is complete in accordance with Construction Documents and ready for Public Works Project Manager's inspection.
- B. Submit final Application for Payment identifying total adjusted Contract Sum / Price, previous payments, and amount remaining due.

#### 1.36 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. Clean interior and exterior surfaces exposed to view. All surfaces shall be free of visible dirtiness. Facility shall be cleaned to a level of "move in ready."
- C. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.37 ADJUSTING

- A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.38 OPERATION AND MAINTENANCE MANUAL

- A. Provide two (2) bound, hard-copy operation and maintenance manuals that include all systems, materials, products, equipment, mechanical and electrical equipment and systems supplied and installed in the Work. Provide electronic version of operation and maintenance manual also.
- B. Review and approval of operation and maintenance manuals is required prior to releasing final payment.

1.39 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide Products, spare parts, maintenance and extra materials in quantities specified in individual Specification Sections.
- B. Deliver to the Work site and place in location as directed. Provide a letter of transmittal and obtain signature from Public Works Project Manager or Owner's representative as designated by Public Works Project Manager.

1.40 AS-BUILT AND RECORD DRAWINGS AND SPECIFICATIONS

- A. Contractor-produced Drawings and Specifications shall remain property of Contractor whether Project for which they are made is executed or not. Contractor shall furnish Architect / Engineer with original marked up redlines of Construction Documents' drawings and specifications that shall include all Addendums, Change Orders, Construction Bulletins, on-site changes, field corrections, etc.
- B. Architect / Engineer shall update original Construction Documents to include all Addendums & any other changes including those provided by Contractor in As-Built Drawings & Specifications. These updates are project Record Drawings & Specifications.
- C. Architect / Engineer, Engineer shall furnish Public Works Project Manager with Record Drawings as detailed in Professional Services Agreement.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

## SECTION 01 74 19

### CONSTRUCTION WASTE MANAGEMENT, DISPOSAL & RECYCLING

#### PART 1 GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Summary
2. Waste Management Goals
3. Construction and / or Demolition Waste Management
4. Waste Management Plan
5. Reuse
6. Recycling
7. Materials Sorting and Storage On Site
8. Lists of Recycling Facilities Processors and Haulers
9. Waste Management Plan Form

###### B. Related Sections:

1. Section 01 00 00 - General Requirements
2. Section 02 41 00 - Demolition

##### 1.2 WASTE MANAGEMENT GOALS

- A. Dane County requires that as many waste materials as possible produced as result of this project be salvaged, reused or recycled in order to minimize impact of construction waste on landfills and to minimize expenditure of energy and cost in fabricating new materials. Additional information may be found in Dane County Green Building Policy, Resolution 299, 1999-2000.

##### 1.3 CONSTRUCTION AND / OR DEMOLITION WASTE MANAGEMENT

- A. All construction and demolition waste suitable for recycling may go to Dane County Construction & Demolition Recycling Facility located at 7102 US Hwy 12, Madison, located across from Yahara Hills Golf Course. This facility can receive mixed loads of construction and demolition waste. For complete list of acceptable materials see [www.countyofdane.com/pwht/recycle/CD\\_Recycle.aspx](http://www.countyofdane.com/pwht/recycle/CD_Recycle.aspx).
- B. Dane County Landfill, also at 7102 US Hwy 12, Madison, must receive all other waste from this project. [www.countyofdane.com/pwht/recycle/landfill.aspx](http://www.countyofdane.com/pwht/recycle/landfill.aspx).

##### 1.4 WASTE MANAGEMENT PLAN

- A. Contractor shall develop Waste Management Plan (WMP) for this project. Dane County's Special Projects & Materials Manager may be contacted with questions. Outlined in RECYCLING section of this specification are examples of materials that can be recycled or reused as well as recommendations for waste sorting methods.

- B. Contractor shall complete WMP and include cost of recycling / reuse in Bid. WMP will be submitted to Public Works Project Manager within fifteen (15) business days of Bid Due date. Copy of blank WMP form is in this Section. Submittal shall include cover letter and WMP form with:
1. Information on:
    - a. Types of waste materials produced as result of work performed on site;
    - b. Estimated quantities of waste produced;
    - c. Identification of materials with potential to be recycled or reused;
    - d. How materials will be recycled or reused;
    - e. On-site storage and separation requirements (on site containers);
    - f. Transportation methods; and
    - g. Destinations.

#### 1.5 REUSE

- A. Contractors and subcontractors are encouraged to reuse as many waste materials as possible. Salvage should be investigated for materials not reusable on site.

#### 1.6 RECYCLING

- A. These materials may be recycled at Dane County Construction & Demolition Recycling Facility:
1. Wood.
  2. Wood Pallets.
  3. PVC Plastic (pipe, siding, etc.).
  4. Asphalt & Concrete.
  5. Bricks & Masonry.
  6. Vinyl Siding.
  7. Cardboard.
  8. Metal.
  9. Unpainted Gypsum Drywall.
  10. Shingles.
- B. These materials can be recycled elsewhere in Dane County area:
1. Fluorescent Lamps.
  2. Foam Insulation & Packaging (extruded and expanded).
  3. Carpet Padding.
  4. Barrels & Drums.
- C. All materials must be recycled at WDNR permitted waste processing facilities that adhere to all State Statutes.

#### 1.7 MATERIALS SORTING AND STORAGE ON SITE

- A. Contractor shall provide separate containers for recyclable materials. Number of containers will be dependent upon project and site conditions.
- B. Contractor shall provide on-site locations for subcontractors supplied recycling containers to help facilitate recycling.

- C. Mixed loads of recycled materials are allowed only per instructions at [www.countyofdane.com/pwht/recycle/CD\\_Recycle.aspx](http://www.countyofdane.com/pwht/recycle/CD_Recycle.aspx).

#### 1.8 LISTS OF RECYCLING FACILITIES PROCESSORS AND HAULERS

- A. Refer to [www.countyofdane.com/pwht/recycle/CD\\_Recycle.aspx](http://www.countyofdane.com/pwht/recycle/CD_Recycle.aspx) for information on Dane County Construction & Demolition Recycling Facility.
- B. Web site [www.countyofdane.com/pwht/recycle/categories.aspx](http://www.countyofdane.com/pwht/recycle/categories.aspx) lists current information for Dane County Recycling Markets. Contractors can also contact Allison Rathsack at 608/266-4990, or local city, village, town recycling staff listed at site [www.countyofdane.com/pwht/recycle/contacts.aspx](http://www.countyofdane.com/pwht/recycle/contacts.aspx). Statewide listings of recycling / reuse markets are available from UW Extension at <https://www.uwgb.edu/shwec/>.

#### PART 2 PRODUCTS

Not Used.

#### PART 3 EXECUTION

Not Used.

END OF SECTION

## WASTE MANAGEMENT PLAN FORM



Contractor Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone No.: \_\_\_\_\_ Recycling Coordinator: \_\_\_\_\_

MATERIAL	ESTIMATED QUANTITY	DISPOSAL METHOD (CHECK ONE)	RECYCLING / REUSE COMPANY OR DISPOSAL SITE
Salvaged & reused building materials	_____ cu. yds. _____ tons	_____ Recycled    _____ Reused _____ Landfilled    _____ Other	Name: _____
Wood	_____ cu. yds. _____ tons	_____ Recycled    _____ Reused _____ Landfilled    _____ Other	Name: _____
Wood Pallets	_____ units	_____ Recycled    _____ Reused _____ Landfilled    _____ Other	Name: _____
PVC Plastic	_____ cu. ft. _____ lbs.	_____ Recycled    _____ Reused _____ Landfilled    _____ Other	Name: _____
Asphalt & Concrete	_____ cu. ft. _____ lbs.	_____ Recycled    _____ Reused _____ Landfilled    _____ Other	Name: _____
Bricks & Masonry	_____ cu. ft. _____ lbs.	_____ Recycled    _____ Reused _____ Landfilled    _____ Other	Name: _____
Vinyl Siding	_____ cu. ft. _____ lbs.	_____ Recycled    _____ Reused _____ Landfilled    _____ Other	Name: _____
Cardboard	_____ cu. ft. _____ lbs.	_____ Recycled    _____ Reused _____ Landfilled    _____ Other	Name: _____
Metals	_____ cu. yds. _____ tons	_____ Recycled    _____ Reused _____ Landfilled    _____ Other	Name: _____
Unpainted Gypsum / Drywall	_____ cu. yds. _____ tons	_____ Recycled    _____ Reused _____ Landfilled    _____ Other	Name: _____
Shingles	_____ cu. yds. _____ tons	_____ Recycled    _____ Reused _____ Landfilled    _____ Other	Name: _____
Fluorescent Lamps	_____ cu. ft. _____ lbs.	_____ Recycled    _____ Reused _____ Landfilled    _____ Other	Name: _____
Foam Insulation	_____ cu. ft. _____ lbs.	_____ Recycled    _____ Reused _____ Landfilled    _____ Other	Name: _____
Carpet Padding	_____ cu. ft. _____ lbs.	_____ Recycled    _____ Reused _____ Landfilled    _____ Other	Name: _____



Barrels & Drums	_____ units	_____ Recycled _____ Landfilled	_____ Reused _____ Other	Name: _____
Glass	_____ cu. yds. _____ tons	_____ Recycled _____ Landfilled	_____ Reused _____ Other	Name: _____
Other	_____	_____ Recycled _____ Landfilled	_____ Reused _____ Other	Name: _____
Other	_____	_____ Recycled _____ Landfilled	_____ Reused _____ Other	Name: _____
Other	_____	_____ Recycled _____ Landfilled	_____ Reused _____ Other	Name: _____
Other	_____	_____ Recycled _____ Landfilled	_____ Reused _____ Other	Name: _____
Other	_____	_____ Recycled _____ Landfilled	_____ Reused _____ Other	Name: _____

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**SECTION 02 20 00**  
**GENERAL SITEWORK REQUIREMENTS**

**PART 1 GENERAL**

**1.1 SCOPE**

- A. The work under this section shall consist of providing all work, materials, labor, equipment, and supervision necessary to provide the work on the site as provided for in the technical specifications and on the drawings.
- B. All work on public facilities or on public lands and/or public rights of way shall conform to the applicable City of Stoughton's Construction Standards stated below.
- C. All work shall be in accordance with applicable manufacturer's instructions.

**1.2 RELATED WORK AND PROVISIONS**

- A. This section relates to all Division 2 sections as they pertain to SITEWORK to be performed.
- B. This specification shall apply to all site work unless otherwise specified.
- C. Applicable provisions of Division 1 shall govern all work under Division 2 and all Division 2 specifications.

**1.3 REFERENCE STANDARDS**

- A. Abbreviations of standards or organizations referenced in this specification are as follows:

AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Boiler Manufacturers Association
ACPA	American Concrete Pipe Association
AGA	American Gas Association
AMCA	Air Movement and Control Association
ANSI	American National Standards Institute
ARI	Air Conditioning and Refrigeration Institute
ASME	American Society of Mechanical Engineers
ASPE	American society of Plumbing Engineers
ASSE	American Society of Sanitary Engineering
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
AWS	American Welding Society
CISPI	Cast Iron Soil Pipe Institute
CS	Commercial Standards, Products Standards Sections, Office of Eng. Standards Service, NBS
EPA	Environmental Protection Agency
FS	Federal Specifications, Superintendent of Documents, U.S. Government Printing Office
IAPMO	International Association of Plumbing & Mechanical Officials
IEEE	Institute of Electrical and Electronics Engineers
ISA	Instrument Society of America
MSS	Manufacturer's Standardization Society of the Valve & Fitting Industry, Inc.
NBS	National Bureau of Standards
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NSF	National Sanitation Foundation
PDI	Plumbing and Drainage Institute
STI	Steel Tank Institute
UL	Underwriters Laboratories Inc.
- B. Where reference is made to the "Construction Standards", it shall be construed to mean the pertinent section of the City of Stoughton's Construction Standards.

**1.4 SUBSTITUTIONS**

- A. Substitution of Materials: Refer to General Conditions of the Contract.

- B. Where equipment, accessories, or materials are used which differ in arrangement, configuration, dimensions, ratings, or engineering parameters from those indicated in the contract documents, the Contractor is responsible for all costs involved in integrating the equipment or accessories into the system and for obtaining the intended performance from the system into which these items are placed.

#### **1.5 CONTINUITY OF EXISTING TRAFFIC, PARKING, AND UTILITIES**

- A. Refer also to Division 01 - Contract General Requirements.
- B. Do not interrupt or change existing traffic, delivery, parking, or utility services without prior written approval from the Construction Representative. When interruption is required, coordinate schedule with the Owner agency to minimize disruptions. Unless specifically stated, all work involved in interrupting or changing existing services is to be done during normal working hours.
- C. Verify the locations of any water, drainage, gas, sewer, electric, drainage, gas, sewer, electric, telephone, fuel, steam lines or other utilities, and site features which may be encountered in any excavations or other sitework. All lines shall be properly underpinned and supported to avoid disruption of service. Any service connections encountered which are to be removed shall be cut off at the limits of the excavation and capped in accordance with the requirements of permits governing such removals. Any permits required for this work will be obtained by the Owner upon request of the Contractor.
- D. The Contractor shall comply with Wisconsin Statutes 62.15(11) Street Obstructions specifically that doing any work which shall in any manner obstruct the streets or sidewalks shall put up and maintain barriers conforming to the standards for traffic control devices in the manual adopted by the Department of Transportation under s. 84.02 (4) (e) to prevent accidents, and be liable for all damages caused by failure so to do. All contracts shall contain a provision covering this liability, and also a provision making the contractor liable for all damages caused by the negligent digging up of streets, alleys or public grounds, or which may result from the Contractor's carelessness in the prosecution of such work.

#### **1.6 PROTECTION OF EXISTING WORK AND FACILITIES**

- A. Verify the locations of, and protect, any signs, paved surfaces, buildings, structures, landscaping, streetlights, utilities, and all other such facilities that may be encountered or interfered with during the progress of the work. Take all measures necessary to safeguard all existing work and facilities which are outside the limits of the work or items which are within the construction limits but are intended to remain.
- B. Protect all paved, turfed, and landscaped surfaces to remain. Protect all areas outside of the construction limits from the effects of erosion in accordance with the Erosion Control specification section.

#### **1.7 CONSTRUCTION LIMITS**

- A. Construction Limits are indicated on the drawings. In the absence of such a designation on the drawings, confine work to the minimum area reasonably necessary to undertake the work as determined by the Engineer. All areas disturbed by excavation and grading, plus such additional areas as are disturbed by construction related activities including construction access and storage and installation of materials shall be considered the "Construction Area".

#### **1.8 EQUIPMENT AND MATERIALS FURNISHED BY OTHERS**

- A. None.

#### **1.9 SUBMITTALS**

- A. Refer also to Division 01 - Contract General Requirements.
- B. Submit manufacturer's preproduction (shop) drawings for any off-site constructed sitework items for approval prior to the start of manufacturing and any electrically powered equipment.

#### **1.10 CERTIFICATIONS AND INSPECTIONS**

- A. Refer also to Division 01 - Contract General Conditions.
- B. Obtain and pay for all required sampling, testing, inspections, and certifications except those provided by the Architect/Engineer (A/E). Deliver originals of certificates and documents to the Owner's Project Representative. Include copies of the certifications and documents in the Operating and Maintenance instructions.

### **1.11 OPERATING AND MAINTENANCE INSTRUCTIONS**

- A. Refer also to Division 01 - Contract General Requirements.
- B. Assemble material in an operating and maintenance manual composed of three-ring or post binders, using and index at the front of each volume and tabs for each system or type of equipment installed. In addition to the data indicated in the General Requirements, include the following information:
  - 1. Copies of all approved shop drawings
  - 2. Manufacturer's wiring diagrams for electrically powered equipment
  - 3. Records of tests performed to certify compliance with system requirements
  - 4. Certificates of inspection by regulatory agencies
  - 5. Parts lists for manufactured equipment
  - 6. Lubrication instructions, including lists of frequency of lubrication during construction
  - 7. Warranties and/or guarantees
  - 8. Additional information as indicated in the technical specification sections

### **1.12 TRAINING OF OWNER PERSONNEL**

- A. Instruct Owner personnel or their designee in the proper operation and maintenance of systems and equipment provided as part of this project.

### **1.13 RECORD DRAWINGS**

- A. Refer also to Division 01 - Contract General Requirements.
- B. Include copies of record drawings with the Operating and Maintenance instructions.

## **PART 2 PRODUCTS**

### **2.1 TRAFFIC CONTROL - BARRICADES, SIGNS, AND WARNING DEVICES**

- A. Provide traffic barricades, traffic signs, and warning devices in accordance with governing codes and regulations and the Manual of Uniform Traffic Control Devices (MUTCD).
- B. Provide excavation barrier fencing in plastic, blaze orange color together with all supports and braces necessary to provide an adequate safety barrier to unattended excavations.

### **2.2 WARNING SIGNS**

- A. Provide all necessary warning signing as required by OSHA, these specifications, as directed by the City of Stoughton's Construction Representative and as shown on the drawings. Payment for providing, placing, maintaining, and removing traffic control devices will be paid under the traffic control bid item as a lump sum item for all project areas.

## **PART 3 EXECUTION**

### **3.1 PROJECT SITE CONDITIONS**

- A. Maintain a clean, safe, and orderly site.
- B. Provide adequate barricades, guards, warning lights, and other protection required at excavation and hazards created by work.
- C. Control access to the site by only authorized personnel and vehicles.
- D. Maintain site housekeeping to provide for a safe and orderly project site. Collect and dispose of debris as it accumulates.
- E. Provide shoring, bracing, sheet piling, planking, and forming required by the work.
- F. Locate and protect overhead and underground utilities, sidewalks, drains, curbs, trees (including roots) shrubs, ground cover, bench marks, monuments, other reference points, adjacent buildings, materials, and property owned by others that are to remain.
- G. Protect items, bearing responsibility for and replacement cost of damage arising from all operations connected with the work. If items are disturbed or destroyed, replace as directed by the Owner's representative.

- H. Fence and/or box in all trees and plant material which are to remain at the drip line before work is started. Do not permit heavy equipment or stockpiles within branch spread. Remove interfering branches without injury to trunks and cover scars with tree paint.
- I. Control grading around structures; pitch ground to prevent water running into excavated areas.
- J. Pits, trenches within building lines, and other excavations shall be maintained free of water.
- K. Provide trenching, pumping, and other facilities required.
- L. Notify City and Owner's Project Representatives if springs or running water are encountered in excavation; provide discharge by trenches and drains pumping to point outside of excavation. Provide information to Owner's Project Representative of points and areas that water will be discharged. Control discharge with methods acceptable to Wisconsin Department of Natural Resources (WDNR), the City's Project Representative and Local Municipal Regulations. At the Engineer's option, the Contractor shall drain the spring to the storm sewer system by the use of field tile.
- M. Be responsible for control measures to prevent damage from flooding, erosion, and sedimentation to on-site and off-site areas.
- N. Install and maintain temporary desilting basins, terraces, contour furrows, channel linings, waterways, and other measures as shown on plan and as described in the WPDES and City permits obtained for the project to prevent damage.

### **3.2 WATER (DUST CONTROL)**

- A. Contractor shall apply water to the subgrade as directed by the City of Stoughton's Construction Representative for dust control. Water shall be provided by the contractor and placed in accordance with Section 624 of the State Specifications. Water for base compaction shall be incidental to the base aggregate items and will not be paid under this item.

### **3.3 SITE RESTORATION**

- A. Unless otherwise specified or noted on the drawings, fully and completely restore the site to a condition present prior to the work. Restore the surface of all disturbed areas to a like condition of the surface prior to the work. Sawcut and remove all damaged pavements to the nearest existing joints, or with prior permission, to straight and neat lines and repair with like materials to the full depth of the pavement as existed prior to the work.
- B. See applicable Sections for specific restoration requirements.

### **3.4 CLEAN UP**

- A. Level off/shape all waste disposal areas and clean up areas used for the storage of materials or the temporary deposit of excavated earth. Remove all surplus material, tools and equipment.
- B. Burning is not permitted.
- C. Thoroughly clean all sewers and structures and remove and dispose of all debris and mud.

**END OF SECTION**

**SECTION 02 41 00**  
**DEMOLITION**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Selective demolition of built site elements.
- B. Selective demolition of building elements for alteration purposes.
- C. Abandonment and removal of existing utilities and utility structures.

**1.2 RELATED REQUIREMENTS**

- A. Section 00 72 13 - General Conditions of Contract.
- B. Section 00 73 00 - Supplementary Conditions.
- C. Section 00 74 19 - Construction Waste Management, Disposal and Recycling: Limitations on disposal of removed materials; requirements for recycling.
- D. Section 01 00 00 - General Conditions.
- E. Section 02 32 00 - Geotechnical Investigation.
- F. Section 31 10 00 - Site Clearing.
- G. Section 31 20 00 - Earthmoving.
- H. Section 31 25 00 - Erosion Control.

**1.3 REFERENCE STANDARDS**

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2019.
- C. Where reference is made to the "Construction Standards", it shall be construed to mean the City of Stoughton's Construction Standards, except the method of measurement and basis of payment shall not apply.
- D. Where reference is made to the "Standard Specifications", it shall be construed to mean the pertinent section of the Standard Specifications for Sewer and Water Construction in Wisconsin, current edition, and all supplemental and interim supplemental specifications, as they may pertain, except the method of measurement and basis of payment shall not apply.
- E. Where reference is made to the "State Specifications", it shall be construed to mean the pertinent section of the Standard Specifications for Highway and Structure Construction, current edition, and all supplemental and interim supplemental specifications, as they may pertain, except the method of measurement and basis of payment shall not apply.

**1.4 RECORD DRAWINGS**

- A. Maintain Record Drawings showing actual locations of utilities and other features encountered, and any deviations from the original design. Show actual limits of removal and demolition.

**PART 2 PRODUCTS**

**2.1 FILL MATERIALS**

- A. Backfill material for all on-site demolition shall consist of quality, on-site subsoil or quality import granular soils.

**PART 3 EXECUTION**

**3.1 SCOPE**

- A. Refer to site demolition work as indicated on Drawing Sheet C1.0.
- B. Refer to building selective demolition work as indicated on Drawing Sheets AD101, AD102, AD201 and AD701.
- C. Refer to Drawing Sheets PD100, PD101, HD101, ED101, for plumbing, mechanical and electrical systems demolition work as indicated.

### 3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
  - 1. It is not expected that asbestos containing materials (ACM) will be encountered in the Work. If materials suspected of ACM are encountered, do not disturb; immediately notify Owner.
  - 2. It is not expected that lead based paints and/or coatings will be encountered in the Work. If materials suspected of containing lead contaminants are encountered, do not disturb; immediately notify Owner.
  - 3. Obtain required permits.
  - 4. Comply with applicable requirements of NFPA 241.
  - 4. Use of explosives is not permitted.
  - 5. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
  - 6. Provide, erect, and maintain temporary barriers and security devices.
  - 7. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
  - 8. Conduct operations to minimize effects on and interference with neighboring structures and occupants.
  - 9. Do not close or obstruct roadways or sidewalks without permit.
  - 10. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
  - 11. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
  - 12. During excavation activities, if an underground storage tank is encountered, the Contractor shall halt work in the area of the tank and immediately notify the City's Construction Representative.
  - 13. Any existing septic tanks and grease traps encountered shall have all liquids and solids removed and disposed of by a licensed commercial hauler in accordance with City, County, and State regulations and the tank and grease traps shall then be removed and disposed of and the voids filled with suitable materials. Contractor shall notify City's Construction Representative a minimum of 48 hours prior to removing tanks or traps. Contractor shall provide the City's Construction Representative with a copy of all documentation recording proper removal of tanks and traps.
- B. Do not begin removal until receipt of notification to proceed from Owner.
- C. Protect existing structures and other elements that are not to be removed.
  - 1. Provide required bracing and shoring.
  - 2. Prevent movement or settlement of adjacent structures or structures not requiring demolition.

### 3.3 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

### 3.4 SELECTIVE DEMOLITION

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only:
  - 1. Verify that construction and utility arrangements are as indicated.
  - 2. Report discrepancies to Architect before disturbing existing installation.
  - 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
- B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.



- C. Remove existing work as indicated and as required to accomplish new work:
  - 1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
  - 2. Remove items indicated on drawings.
- D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Technology):
  - 1. Remove existing systems and equipment as indicated.
  - 2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
  - 3. Verify that abandoned services serve only abandoned facilities before removal.
  - 4. Remove abandoned pipe, ducts, conduits, and equipment, including those in concealed spaces; remove back to source of supply where possible, otherwise cap stub and tag with identification.
- E. Protect existing work to remain:
  - 1. Prevent movement of or damage to structure to remain; provide shoring and bracing when necessary.
  - 2. Perform cutting to accomplish removals neatly and as required for cutting new work.
  - 3. Repair adjacent construction and finishes damaged during removal work.
  - 4. Patch as specified for patching new work.
- F. Sawing Pavement:
  - 1. All pavement removal, curb removal, sidewalk removal, and driveway removals will require a sawcut at the removal limits. Curb and gutter, sidewalk, and concrete pavement shall be sawcut at the nearest joint to the planned removal limits or as directed by the City's Construction Representative.
  - 2. Sawing pavement will be done in accordance with Section 690 of the State Specifications, except there will be one bid item for sawing pavement to include both asphalt and concrete pavement.
- G. Abandon Water Main:
  - 1. The Contractor shall provide all materials and equipment to abandon and remove water main and water services at locations shown in the plans in accordance with Chapter 4.14.0 of the Standard Specifications. Removal of water main necessary for new connection and placement of new lines shall be included in this item.
- H. Remove Light Pole Base and Fixture:
  - 1. Provide all labor, materials, and equipment for removing existing light poles and fixtures where designated on the plans, disconnecting the existing wiring to the pole and splicing the wire once pole and base are removed, removing the existing concrete base, and disposal off-site.
  - 2. Unless designated otherwise on the plans, light poles and fixtures shall be disposed of off-site.
- I. Tree and Shrub Removal:
  - 1. Provide all labor materials and equipment for removal of existing trees, shrubs, and other vegetation as indicated on the plans or that will be in conflict with any proposed improvements as shown on the plans. Removals shall include complete removal of stumps which conflict with proposed grades to a minimum of 18 inches below proposed finish grade. All trees, shrubs, and brush to be disposed of off-site.
- J. Retaining Wall Removal:
  - 1. Provide all labor materials and equipment for removal of existing boulder retaining walls as indicated on the plans. Removal of retaining wall shall include all materials associated with retaining wall system. Retaining blocks and boulders shall be disposed of off-site. No on-site burial is permitted.

### **3.5 DEMOLITION BELOW GRADE**

- A. Break up and remove concrete slabs-on-grade, unless otherwise shown to remain. Demolish foundation walls and other below grade features in accordance with the plans. Unless otherwise noted, remove all below grade features to a point 2 feet below adjoining existing grade, or proposed grade, whichever is lower. Basement and/or lowest level floors more than 4 feet below existing grade need not be removed, but must be broken up to permit drainage.

**3.6 DEMOLITION BACKFILL - FILLING VOIDS**

- A. Completely fill below grade areas and voids resulting from demolition or removal of structures, underground fuel storage tanks, wells, cisterns, etc., using aggregate fill materials consisting of stone, gravel, or sand free from debris, trash, frozen materials, roots, and other organic matter.
- B. Areas to be filled shall be free of standing water, frost, frozen or unsuitable material, trash, and debris prior to fill placement.
- C. Place fill materials in accordance with Section 31 20 00 - Earthmoving, unless subsequent excavation for new work is required.
- D. Backfill type, lift thickness, and compaction requirements shall be in accordance with Section 31 20 00 - Earthmoving.

**3.7 DEBRIS AND WASTE REMOVAL**

- A. Remove debris, junk, and trash from site.
- B. Remove from site all materials not to be reused on site; comply with requirements of Section 01 74 19 - Waste Management, Disposal and Recycling.
- C. Leave site in clean condition, ready for subsequent work.
- D. Clean up spillage and wind-blown debris from public and private lands.

**END OF SECTION**

**SECTION 03 30 00**  
**CAST-IN-PLACE CONCRETE**

**PART 1 GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related sections:
  - 1. Section 02 20 00 - General Sitework Requirements
  - 2. Section 02 32 00 - Geotechnical Investigation
  - 3. Section 31 20 00 - Earthmoving
  - 4. Section 32 11 23 - Aggregate Base Course

**1.2 SUMMARY**

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

**1.3 REFERENCE STANDARDS**

- A. American Concrete Institute (ACI):
  - 1. ACI 211.1 Proportioning Concrete Mixtures
  - 2. ACI 301 Specifications for Structural Concrete
  - 3. ACI 303.1 Specification for Cast-in-Place Architectural Concrete
  - 4. ACI 305 Hot Weather Concreting
  - 5. ACI 306 Specifications for Cold Weather Concreting
  - 6. ACI 308 Specifications for Curing Concrete
  - 7. ACI 309 Consolidation of Concrete
  - 8. ACI 318 Building Code Requirements for Structural Concrete
- B. Standard Specifications:
  - 1. Where reference is made to the "Construction Standards", it shall be construed to mean the City of Stoughton's Construction Standards, as they may pertain, except the method of measurement and basis of payment shall not apply.
  - 2. Where reference is made to the "Standard Specifications", it shall be construed to mean the pertinent section of the Standard Specifications for Sewer and Water Construction in Wisconsin, current edition, and all supplemental and interim supplemental specifications, as they may pertain, except the method of measurement and basis of payment shall not apply.
  - 3. Where reference is made to the "State Specifications", it shall be construed to mean the pertinent section of the Standard Specifications for Highway and Structure Construction, current edition, and all supplemental and interim supplemental specifications, as they may pertain, except the method of measurement and basis of payment shall not apply.
  - 4. Where reference is made to the "Geotechnical Report", it shall be construed to mean the geotechnical report provided in Section 02 32 00 - Geotechnical Investigation.

**1.4 DEFINITIONS**

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

**1.5 ACTION SUBMITTALS**

- A. See Section 01 00 00 - General Requirements for submittal procedures.
- B. Product Data: For each type of product.

- C. Design Mixtures: For each concrete mixture, submit alternate design mixtures when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
  - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
- D. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- E. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
  - 1. Location of construction joints is subject to approval of the Architect.
  - 2. Suggested construction joints are indicated on the drawings.

#### **1.6 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.
- B. Material Certificates: For each of the following, signed by manufacturers:
  - 1. Cementitious materials.
  - 2. Admixtures.
  - 3. Form materials and form-release agents.
  - 4. Steel reinforcement and accessories.
  - 5. Fiber reinforcement.
  - 6. Waterstops.
  - 7. Curing compounds.
  - 8. Floor and slab treatments.
  - 9. Bonding agents.
  - 10. Adhesives.
  - 11. Vapor retarders.
  - 12. Semirigid joint filler.
  - 13. Joint-filler strips.
  - 14. Repair materials.
- C. Material Test Reports: For the following, from a qualified testing agency:
  - 1. Aggregates: Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity].
- D. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.
- E. Field quality-control reports.
- F. Minutes of preinstallation conference.

#### **1.7 QUALITY ASSURANCE**

- A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
  - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M.

#### **1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.
- B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

#### **1.9 FIELD CONDITIONS**

- A. 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 average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.

2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
  3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:
1. Maintain concrete temperature below 90 deg F at time of placement. 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. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

## **PART 2 PRODUCTS**

### **2.1 CONCRETE, GENERAL**

- A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
1. ACI 301.
  2. ACI 117.

### **2.2 FORM-FACING MATERIALS**

- A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
1. Plywood, metal, or other approved panel materials.
  2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
    - a. For Matte finish, use Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
    - b. For standard finish, use Structural 1, B-B or better; mill oiled and edge sealed.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- D. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.
- E. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.
1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- F. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
1. Furnish ties with integral water-barrier plates to walls indicated to receive damp-proofing or waterproofing.

### **2.3 STEEL REINFORCEMENT**

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.
- C. Epoxy-Coated Reinforcing Bars: ASTM A 615 deformed bars, epoxy coated, with less than 2 percent damaged coating in each 12-inch bar length.
- D. Retain "Stainless-Steel Reinforcing Bars" Paragraph below for stainless-steel reinforcement. Retain one of two options for reinforcement type.

### **2.4 REINFORCEMENT ACCESSORIES**

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
- B. Epoxy-Coated Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, ASTM A 775/A 775M epoxy coated.
- C. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775/A 775M.

- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
1. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
  2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
  3. For zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.

## 2.5 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- B. Cementitious Materials:
1. Portland Cement: ASTM C 150/C 150M, Type I/II.
  2. Fly Ash: ASTM C 618, Class F or C.
  3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
- C. Normal-Weight Aggregates: ASTM C 33/C 33M, coarse aggregate meeting limits for deleterious substances as indicated in ASTM C33 for the weathering region the project is located in, for the element being constructed or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials. .
1. Maximum Coarse-Aggregate Size: 1-1/2 inches, but not more than 1/3 the slab thickness, or nominal.
  2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. Air-Entraining Admixture: ASTM C 260/C 260M.
- E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
  5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
  6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- F. Water: ASTM C 94/C 94M and potable.

## 2.6 FIBER REINFORCEMENT

- A. Synthetic Macro-Fiber: Polyolefin or polypropylene macro-fibers engineered and designed for use in concrete, complying with ASTM C 1116/C 1116M, Type III, 2-1/4 inches long.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. BASF Corp. - Construction Chemicals.
    - b. Euclid Chemical Company (The); an RPM company.
    - c. FORTA Corporation.
    - d. GCP Applied Technologies Inc. (formerly Grace Construction Products).
    - e. Nycon, Inc.
    - f. Propex Operating Company, LLC.

## 2.7 WATERSTOPS

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

## 2.8 VAPOR RETARDERS

- A. Sheet Vapor Retarder: ASTM E 1745, Class A 15 mil with maximum water-vapor permeance of 0.008. Include manufacturer's recommended adhesive or pressure-sensitive tape.

## 2.9 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
- F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, non-dissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering where flooring is adhered to the concrete

## 2.10 REPAIR MATERIALS

- A. Repair Underlayment for slabs beneath floor coverings : Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
  - 1. Cement Binder: ASTM C 150/C 150M, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
  - 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
  - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
  - 4. Compressive Strength: Not less than 4,000 psi at 28 days when tested according to ASTM C 109/C 109M.
- B. Repair Overlayment for slabs with no floor covering: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.
  - 1. Cement Binder: ASTM C 150/C 150M, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
  - 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
  - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
  - 4. Compressive Strength: Not less than 5,000 psi at 28 days when tested according to ASTM C 109/C 109M.

## 2.11 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
  - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: For concrete not exposed to deicing salts, use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of Portland cement, which would otherwise be used, by not less than 35 percent.
- C. For concrete exposed to deicing salts, limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:
  - 1. Fly Ash: 25 percent.
  - 2. Combined Fly Ash and Pozzolan: 25 percent.
  - 3. Slag Cement: 50 percent.
  - 4. Combined Fly Ash or Pozzolan and Slag Cement: 50 percent Portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
  - 5. Silica Fume: 10 percent.
  - 6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
  - 7. Combined Fly Ash or Pozzolans, Slag Cement, and Silica Fume: 50 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.

- D. Limit water-soluble, chloride-ion content in hardened concrete to
  1. 0.06 percent by weight of cement for prestressed concrete.
  2. 0.15 percent by weight of cement for reinforced concrete exposed to chlorides.
  3. 0.30 percent by weight of cement for reinforced concrete not protected from moisture.
  4. 1.00 percent by weight of cement for reinforced concrete protected from moisture.
- E. Admixtures: Use admixtures according to manufacturer's written instructions.
  1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete, as required, for placement and workability.
  2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
  3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.

## 2.12 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Footings: Normal-weight concrete.
  1. Minimum Compressive Strength: As indicated at 28 days.
  2. Maximum W/C Ratio: 0.50.
  3. Slump Limit: 6 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
  4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4 inch to 1-inch nominal maximum aggregate size.
- B. Foundation Walls: Normal-weight concrete.
  1. Minimum Compressive Strength: As indicated at 28 days.
  2. Maximum W/C Ratio: 0.50.
  3. Slump Limit: 5 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture,  $\pm 1$  inch.
  4. Air Content: 6 percent,  $\pm 1.5$  percent at point of delivery for 1-inch or less nominal maximum aggregate size.
- C. Slabs-on-Grade: Normal-weight concrete.
  1. Minimum Compressive Strength: As indicated at 28 days.
  2. Maximum W/C Ratio: 0.43.
  3. Maximum Water Content: 27 gal./cubic yard.
  4. As an alternate to limit of 27 gal./cubic yard, water content, provide documentation of the shrinkage tests the proposed concrete mix conducted in accordance with ASTM C157 for specimens cured for 7 days in water and placed in drying environment for 21 days confirming length change to be less than 0.04 percent at 28 days.
  5. Adjust the proportions of combined coarse, intermediate, and fine aggregates to provide the following particle size distribution, unless otherwise approved:
    - a. Coarseness Factor (CF) of 60 to 70 percent
    - b. Adjusted workability factor of  $[(11.25 - 0.15 \text{ CF}) + 36] \pm 2.5$
    - c. Combined percent retained on any one sieve shall not exceed 22 percent
    - d. Maximum fine aggregate (sand) content 8.5 cubic feet per cubic yard.
  6. Slump Limit: 6 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
  7. Air Content: 5.5 percent,  $\pm 1.5$  percent at point of delivery for 1/2-inch nominal maximum aggregate size; 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch to 1-inch nominal maximum aggregate size. Do not allow air content of trowel-finished floors to exceed 3 percent.
  8. Synthetic Macro-Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than a rate of as indicated on the drawings, but not less than 4 pounds/cubic yard

## 1.13 FABRICATING REINFORCEMENT

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

## 1.14 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and furnish batch ticket information.
- 3. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1 1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.



## **PART 3 EXECUTION**

### **3.1 FORMWORK INSTALLATION**

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347, as abrupt or gradual, as follows:
  - 1. Class A, 1/8 inch for smooth-formed finished surfaces.
  - 2. Class B, 1/4 inch for rough-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
  - 1. Install keyways, reglets, recesses, and the like, for easy removal.
  - 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

### **3.2 EMBEDDED ITEM INSTALLATION**

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
  - 2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
  - 3. Install dovetail anchor slots in concrete structures as indicated.

### **3.3 VAPOR-RETARDER INSTALLATION**

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.
  - 1. Lap joints 6 inches and seal with manufacturer's recommended tape.

### **3.4 STEEL REINFORCEMENT INSTALLATION**

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
  - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
  - 1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.
- F. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.
- G. Zinc-Coated Reinforcement: Repair cut and damaged zinc coatings with zinc repair material according to ASTM A 780/A 780M. Use galvanized-steel wire ties to fasten zinc-coated steel reinforcement.

### 3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
  - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
  - 2. Form keyed joints as indicated. Embed keys at least 1½ inches into concrete.
  - 3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
  - 4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
  - 5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
  - 6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
  - 7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
  - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
  - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
  - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
  - 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Section 07 92 00 - Joint Sealants, are indicated.
  - 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

### 3.6 WATERSTOP INSTALLATION

- A. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

### 3.7 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
  - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
  - 1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
  - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
  - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
  - 1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
  - 2. Maintain reinforcement in position on chairs during concrete placement.
  - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
  - 4. Slope surfaces uniformly to drains where required.
  - 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- F. Placing and finishing:
  - 1. Portland Cement Concrete Pavement: See WisDOT Sections 415 and 416.
  - 2. Sidewalk: See WisDOT Section 602:
    - a. Reinforcement: Remove from reinforcement all dirt, oil, loose mill scale, rust, and other substances that will prevent proper bonding of the concrete to the reinforcement. A minimum of two rebars shall be placed in all sidewalk and curb and gutter that crosses a utility trench.
  - 3. Concrete Curb and Gutter: See WisDOT Section 601.
  - 4. Concrete Island Sloped Nose: See WisDOT Section 620.
  - 5. Concrete Pavement and Concrete Pavement Replacement: See WisDOT Section 415.
  - 6. Curb Ramp Detectable Warning Fields shall be placed in accordance with Section 602.0515 of the State Specifications and per ADA regulations at locations shown on the plans and as directed by the City's Construction Representative.

### **3.8 FINISHING FORMED SURFACES**

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  - 1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.
- C. Rubbed Finish: Apply the following to smooth-formed-finished as-cast concrete where indicated:
  - 1. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix 1 part Portland cement to 1½ parts fine sand with a 1:1 mixture of bonding admixture and water. Add white Portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.

2. Cork-Float Finish: Wet concrete surfaces and apply a stiff grout. Mix 1 part Portland cement and 1 part fine sand with a 1:1 mixture of bonding agent and water. Add white Portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

### 3.9 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.
1. Apply scratch finish to surfaces indicated and to receive concrete floor toppings, to receive mortar setting beds, and for bonded cementitious floor finishes.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
1. Apply float finish to surfaces indicated to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
1. Apply a trowel finish to surfaces indicated, exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
  2. Finish and measure surface, so gap at any point between concrete surface and an unlevelled, freestanding, 10-foot long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/8 inch.
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated, and where ceramic or quarry tile is to be installed by either thickset or thinset method. While concrete is still plastic, slightly scarify surface with a fine broom.
1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.
1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

### 3.10 MISCELLANEOUS CONCRETE ITEM INSTALLATION

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations:
1. Coordinate sizes and locations of concrete bases with actual equipment provided.
  2. Construct concrete bases 4 inches high unless otherwise indicated, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.
  3. Minimum Compressive Strength: 4000 psi at 28 days.
  4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
  5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
  6. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

7. Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.
- D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in-inserts and accessories as shown on Drawings. Screed, tamp, and trowel finish concrete surfaces.

### 3.11 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb./sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
  1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven (7) days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
    - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
    - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
    - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies does not interfere with bonding of floor covering used on Project.

### 3.12 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
  1. Defer joint filling until concrete has aged at least [one] [six] month(s). Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

### 3.13 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part Portland cement to 2½ parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
  1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact

- with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
  3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
  2. After concrete has cured at least 14 days, correct high areas by grinding.
  3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
  4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
  5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
  6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
  7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

### 3.14 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
- B. Inspections:
1. Steel reinforcement placement.
  2. Steel reinforcement welding.
  3. Headed bolts and studs.
  4. Verification of use of required design mixture.
  5. Concrete placement, including conveying and depositing.
  6. Curing procedures and maintenance of curing temperature.
  7. Verification of concrete strength before removal of shores and forms from beams and slabs.
- C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cubic yards, but less than 25 cubic yards, plus one set for each additional 50 cubic yards or fraction thereof.
  2. Testing Frequency: Obtain at least one composite sample for each 100 cubic yards or fraction thereof of each concrete mixture placed each day.

- a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
3. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
4. Air Content: ASTM C 231/C 231M, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
5. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
6. Unit Weight: ASTM C 567/C 567M, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
7. Compression Test Specimens: ASTM C 31/C 31M.
  - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
  - b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
8. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at seven (7) days and one set of two specimens at 28 days.
  - a. Test one set of two field-cured specimens at seven (7) days and one set of two specimens at 28 days.
  - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
10. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
11. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
12. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
13. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
14. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
15. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

**END OF SECTION**

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**SECTION 04 20 00**  
**UNIT MASONRY**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Concrete masonry units.
- B. Brick Veneer.
- C. Mortar and grout.
- D. Reinforcement and anchorage.
- E. Flashings.
- F. Lintels.
- G. Accessories.

**1.2 RELATED REQUIREMENTS**

- A. Section 07 25 00 - Weather Barriers: Water-resistive barriers or air barriers applied to the exterior face of the backing sheathing or masonry.
- .B. Section 07 92 00 - Joint Sealants: Sealing control and expansion joints.

**1.3 REFERENCE STANDARDS**

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- B. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units; 2020.
- C. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.
- D. ASTM C150/C150M - Standard Specification for Portland Cement; 2020.
- E. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2018.
- F. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale); 2019.
- G. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019.
- H. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.
- I. ASTM C1148 - Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar; 1992a (Reapproved 2014).
- J. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.
- K. BIA Technical Notes No. 13 - Ceramic Glazed Brick Exterior Walls; 2017.
- L. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls; 2005.
- M. BIA Technical Notes No. 46 - Maintenance of Brick Masonry; 2017.
- N. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.
- C. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

**PART 2 PRODUCTS**

**2.1 CONCRETE MASONRY UNITS**

- A. Concrete Block: Comply with referenced standards and as follows:
  - 1. Size: Standard units with nominal face dimensions of 16 by 8 inches (400 by 200 mm) and nominal depths as indicated on drawings for specific locations.

## 2.2 BRICK VENEER

- A. Facing Brick: ASTM C216, Type FBS Smooth, Grade SW.
- B. Acceptable product/manufacturer's:
  - 1. Ebony Ironspot by Cloud Ceramics ([www.cloudceramics.com](http://www.cloudceramics.com)).
  - 2. Dark Iron Spot by Yankee Hill, [www.yankeehillbrick.com](http://www.yankeehillbrick.com).
- B. Size: Modular.
- C. Texture: Velour.

## 2.3 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Mortar Aggregate: ASTM C144.
- D. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
  - 1. Color(s): To match Architect's sample(s) when incorporated into specified mix design(s).
- E. Water: Clean and potable.
- F. Accelerating Admixture: Nonchloride type for use in cold weather.
- G. Integral Water Repellent Admixture for Mortar: Polymeric liquid admixture added to mortar at the time of manufacture.
  - 1. Use only in combination with masonry units manufactured with integral water repellent admixture.
  - 2. Use only water repellent admixture for mortar from the same manufacturer as water repellent admixture in masonry units.
  - 3. Meet or exceed performance specified for water repellent admixture used in masonry units.

## 2.4 REINFORCEMENT AND ANCHORAGE

- A. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi) (280 MPa), deformed billet bars; galvanized.
- B. Single Wythe Joint Reinforcement: Truss or ladder type, ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3.
- B. Two-Piece Wall Ties: Formed steel wire, 0.1875 inch (4.8 mm) thick, adjustable, eye and pintle type, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to provide not less than 5/8 inch (16 mm) of mortar coverage from masonry face and to allow vertical adjustment of up to 1-1/4 in (32 mm).

## 2.5 FLASHINGS

- A. Membrane Non-Asphaltic Flashing Materials:
  - 1. Composite Polymer Flashings - Self-Adhering: Composite polyethylene; 40 mil (1mm) thick with pressure-sensitive adhesive and release paper.
- B. Factory-Fabricated Flashing Corners and End Dams: Stainless steel.
- C. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.
- D. Drip Edge: Stainless steel; angled drip with hemmed edge; compatible with membrane and adhesives.
- E. Lap Sealants and Tapes: As recommended by flashing manufacturer; compatible with membrane and adhesives.

## 2.6 ACCESSORIES

- A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
- B. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; in maximum lengths available.
- C. Cavity Drainage Material: Polypropylene mesh panels bonded to water and vapor permeable fabric, complying with ASTM E2925, , sized to thickness of wall cavity, and installed full height and width of cavity.  
Basis-of-Design: DriPlane by Mortar Net Solutions, [www.mortarnet.com](http://www.mortarnet.com).

- D. Weeps:
  - 1. Type: Extruded propylene with honeycomb design.
  - 2. Color(s): As selected by Architect from manufacturer's full range.
- E. Cavity Vents:
  - 1. Type: Extruded propylene with honeycomb design.
  - 2. Color(s): As selected by Architect from manufacturer's full range.
- F. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

## **2.7 LINTELS**

- A. Prefabricated Steel Lintels. Refer to Section 05 50 00 – Metal Fabrications.

## **2.8 MORTAR AND GROUT MIXING**

- A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
  - 1. Masonry below grade and in contact with earth: Type S.
- B. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.
- C. Mixing: Use mechanical batch mixer and comply with referenced standards.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive masonry.

### **3.2 COLD AND HOT WEATHER REQUIREMENTS**

- A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

### **3.3 COURSING**

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
  - 1. Bond: Running.
  - 2. Coursing: One unit and one mortar joint to equal 8 inches (200 mm).
  - 3. Mortar Joints: Concave.
- D. Brick Units:

### **3.4 WEEPS/CAVITY VENTS**

- A. Install weeps in veneer and cavity walls at 24 inches (600 mm) on center horizontally on top of through-wall flashing above shelf angles and lintels and at bottom of walls.
- B. Install cavity vents in veneer and cavity walls at 32 inches (800 mm) on center horizontally below shelf angles and lintels and near top of walls.

### **3.5 CAVITY MORTAR CONTROL**

- A. Install per manufacturer's instructions, including place drainage material horizontally against exterior wall, fabric side out and mesh toward building interior. Install window and frames before installing drainage material.

### **3.6 REINFORCEMENT AND ANCHORAGE - GENERAL, SINGLE WYTHE MASONRY, and CAVITY WALL MASONRY**

- A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches (400 mm) on center.

### **3.7 MASONRY FLASHINGS**

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

1. Turn up flashing ends at least 4 inches, minimum, to form watertight pan at non-masonry construction.
- B. Terminate flashing up 8 inches minimum on vertical surface of backing:
  1. Install vertical leg of flashing behind water-resistive barrier sheet over backing.
- C. Install flashing in accordance with manufacturer's instructions and BIA Technical Notes No. 7.
- D. Extend metal flashings through exterior face of masonry and terminate in an angled drip with hemmed edge. Install joint sealer below drip edge to prevent moisture migration under flashing.
- E. Lap end joints of flashings at least 6 inches (152 mm), minimum, and seal watertight with flashing sealant/adhesive.

### **3.8 LINTELS**

- A. Install painted loose steel lintels over openings. Existing lintels may be re-used if lengths are adequate and are cleaned and repainted.
- B. Maintain minimum 8 inch bearing on each side of opening.

### **3.9 CONTROL AND EXPANSION JOINTS**

- A. Do not continue horizontal joint reinforcement through control or expansion joints.
- B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

### **3.10 TOLERANCES**

- A. Install masonry within the site tolerances found in TMS 402/602.

### **3.11 CLEANING**

- A. Remove excess mortar and mortar droppings.
- B. Clean soiled surfaces with cleaning solution.
- C. Use non-metallic tools in cleaning operations.

### **3.12 PROTECTION**

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

**END OF SECTION**

**SECTION 05 12 00**  
**STRUCTURAL STEEL FRAMING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Structural steel.
  - 2. Grout.
- B. Related Requirements:
  - 1. Section 09 91 13 - Exterior Painting.
  - 2. Section 09 91 23 - Interior Painting for surface-preparation and priming requirements.

**1.3 DEFINITIONS**

- A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

**1.4 COORDINATION**

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

**1.5 ACTION SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: For each type of product.
- C. Sustainable Design Submittals:
- D. Shop Drawings: Show fabrication of structural-steel components.
  - 1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
  - 2. Include embedment Drawings.
  - 3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
  - 4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
  - 5. Identify members and connections of the Seismic-Load-Resisting System.
  - 6. Indicate locations and dimensions of protected zones.
  - 7. Identify demand critical welds.

**1.6 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.
- B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

- C. Mill test reports for structural steel, including chemical and physical properties.
- D. Product Test Reports: For the following:
  1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
  2. Tension-control, high-strength, bolt-nut-washer assemblies.
  3. Shop primers.
  4. Nonshrink grout.
- E. Survey of existing conditions.
- F. Source quality-control reports.
- G. Field quality-control reports.

### **1.7 QUALITY ASSURANCE**

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.
- B. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.
- C. Shop-Painting Applicators: Qualified according to AISC's Sophisticated Paint -Endorsement P1 or to SSPC-QP 3, "Standard Procedure for Evaluating Qualifications of Shop Painting Applicators."
- D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8/D1.8M. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.
- E. Comply with applicable provisions of the following specifications and documents:
  1. AISC 303.
  2. AISC 341 and AISC 341s1.
  3. AISC 360.
  4. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

### **1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
  1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
  1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
  2. Clean and relubricate bolts and nuts that become dry or rusty before use.
  3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

## **PART 2 - PRODUCTS**

### **2.1 STRUCTURAL-STEEL MATERIALS**

- A. W-Shapes: ASTM A 992/A 992M Grade 50 Channels, Angles, M , S-Shapes: ASTM A 36.
- B. Plate and Bar: ASTM A 36.
- C. Cold-Formed Hollow Structural Sections: ASTM A 500/A 500M, Grade B, structural tubing.
- D. Steel Pipe: ASTM A 53/A 53M, Type E or Type S, Grade B.

1. Weight Class: As indicated
  2. Finish: As indicated
- E. Welding Electrodes: Comply with AWS requirements.

## **2.2 BOLTS, CONNECTORS, AND ANCHORS**

- A. High-Strength Bolts, Nuts, and Washers: ASTM A 325 Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers; all with plain finish.
- B. Unheaded Anchor Rods: ASTM F 1554, Grade 36.
1. Configuration: As indicated
  2. Nuts: ASTM A 563 heavy-hex carbon steel.
  3. Plate Washers: ASTM A 36/A 36M carbon steel.
  4. Washers: ASTM F 436 , Type 1, hardened carbon steel.
  5. Finish: [Plain] [Hot-dip zinc coating, ASTM A 153/A 153M, Class C] [Mechanically deposited zinc coating, ASTM B 695, Class 50].
- C. Threaded Rods: ASTM A 36 UNO .
1. Nuts: ASTM A 563 heavy-hex carbon steel.
  2. Washers: ASTM F 436 Type 1, hardened A36/A 36M] carbon steel.
  3. Finish: [Plain] [Hot-dip zinc coating, ASTM A 153/A 153M, Class C] [Mechanically deposited zinc coating, ASTM B 695, Class 50].

## **2.3 PRIMER**

- A. Primer: Comply with Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting."
- B. Galvanizing Repair Paint: ASTM A 780.

## **2.4 GROUT**

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

## **2.5 FABRICATION**

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and to AISC 360.
1. Camber structural-steel members where indicated.
  2. Fabricate beams with rolling camber up.
  3. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain markings until structural steel has been erected.
  4. Mark and match-mark materials for field assembly.
  5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.
- C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.
- D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 2, "Hand Tool Cleaning"
- F. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.
1. Cut, drill, or punch holes perpendicular to steel surfaces
  2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.

3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

## 2.6 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
  1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
  1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

## 2.7 SHOP PRIMING

- A. Shop prime steel surfaces except the following:
  1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches
  2. Surfaces to be field welded.
  3. Surfaces of high-strength bolted, slip-critical connections.
  4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
  5. Galvanized surfaces.
  6. Surfaces enclosed in interior construction.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
  1. SSPC-SP 2, "Hand Tool Cleaning."
  2. SSPC-SP 3, "Power Tool Cleaning."
  3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
  4. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
  5. SSPC-SP 14/NACE No. 8, "Industrial Blast Cleaning."
  6. SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  7. SSPC-SP 10/NACE No. 2, "Near-White Blast Cleaning."
  8. SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning."
  9. SSPC-SP 8, "Pickling."
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
  1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
  2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.
- D. Painting: Prepare steel and apply a one-coat, nonasphaltic primer complying with SSPC-PS Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Systems," to provide a dry film thickness of not less than 1.5 mils.

## 2.8 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.
  1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.
  2. Galvanize **lintels shelf angles and welded door frames** attached to structural-steel frame and located in exterior walls.



## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.
  - 1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

### **3.2 ERECTION**

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
- C. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
  - 1. Level and plumb individual members of structure.
  - 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- D. Splice members only where indicated.
- E. Do not use thermal cutting during erection unless approved by Engineer. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.
- F. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.
- G. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

### **3.3 FIELD CONNECTIONS**

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
  - 1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
  - 1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
  - 2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
  - 3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," for mill material.

### **3.4 FIELD QUALITY CONTROL**

- A. Testing Agency: **Engage** a qualified testing agency to perform tests and inspections.
- B. Bolted Connections: Inspect bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- C. Welded Connections: Visually inspect field welds according to AWS D1.1/D1.1M.
  - 1. In addition to visual inspection, test and inspect field welds according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
    - a. Liquid Penetrant Inspection: ASTM E 165.

- b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
- c. Ultrasonic Inspection: ASTM E 164.
- d. Radiographic Inspection: ASTM E 94.

**3.5 REPAIRS AND PROTECTION**

- A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780/A 780M.
- B. Touchup Painting: Cleaning and touchup painting are specified in Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting."
- C. Touchup Priming: Cleaning and touchup priming are specified in Section 09 96 00 "High-Performance Coatings."

**END OF SECTION**

**SECTION 05 50 00**  
**METAL FABRICATIONS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Steel framing and supports for mechanical and electrical equipment.
  - 2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
  - 3. Miscellaneous steel trim including steel angle corner guards and steel edgings
  - 4. steel plate for magnetic shield storage to be installed on Garage wall.
  - 5. Metal bollards.
  - 6. Loose bearing and leveling plates for applications where they are not specified in other Sections.
- B. Products furnished, but not installed, under this Section include the following:
  - 1. Loose steel lintels.
  - 2. Anchor bolts
  - 3. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.
- C. Related Requirements:
  - 1. Section 03 30 00 - Cast-in-Place Concrete for installing anchor bolts, steel pipe sleeves, slotted-channel inserts, wedge-type inserts, and other items cast into concrete.
  - 2. Section 04 20 00 - Unit Masonry for installing loose lintels, anchor bolts, and other items built into unit masonry.
  - 3. Section 05 12 00 - Structural Steel Framing.

**1.3 COORDINATION**

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

**1.4 ACTION SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: For the following:
  - 1. Paint products.
  - 2. Grout.
- C. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
- D. Samples for Verification: For each type and finish of extruded nosing, and tread.

- E. Delegated-Design Submittal: For ladders including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For professional engineer.
- B. Mill Certificates: Signed by stainless-steel manufacturers, certifying that products furnished comply with requirements.
- C. Welding certificates.
- D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- E. Research/Evaluation Reports: For post-installed anchors, from ICC-ES.

#### **1.6 QUALITY ASSURANCE**

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  - 2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
  - 3. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."

#### **1.7 FIELD CONDITIONS**

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

### **PART 2 - PRODUCTS**

#### **2.1 PERFORMANCE REQUIREMENTS**

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design ladders.
- B. Structural Performance of Aluminum Ladders: Aluminum ladders shall withstand the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
  - 1. Temperature Change: 120 deg F , ambient; 180 deg F, material surfaces

#### **2.2 METALS**

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Stainless-Steel Sheet, Strip, and Plate: ASTM A 240/A 240M or ASTM A 666, Type 304.
- D. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.
- E. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.
- F. Rolled-Stainless-Steel Floor Plate: ASTM A 793.
- G. Abrasive-Surface Floor Plate: Steel plate with abrasive granules rolled into surface.
- H. Steel Tubing: ASTM A 500/A 500M, cold-formed steel tubing.

- I. Steel Pipe: ASTM A 53/A 53M, Standard Weight (Schedule 40) unless otherwise indicated.

### **2.3 FASTENERS**

- A. General: Unless otherwise indicated, provide **Type 304**, stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with **ASTM B 633** or **ASTM F 1941**, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
  - 1. Provide stainless-steel fasteners for fastening aluminum.
  - 2. Provide stainless-steel fasteners for fastening stainless steel.
  - 3. Provide stainless-steel fasteners for fastening nickel silver.
  - 4. Provide bronze fasteners for fastening bronze.
- B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.
- C. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 325, Type 3; with hex nuts, ASTM A 563, Grade C3; and, where indicated, flat washers.
- D. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F 593; with hex nuts, ASTM F 594; and, where indicated, flat washers; Alloy Group 1.
- E. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.
  - 1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.
- F. Post-Installed Anchors: Torque-controlled expansion anchors.
  - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.

### **2.4 MISCELLANEOUS MATERIALS**

- A. Shop Primers: Provide primers that comply with Section 09 91 13 - Exterior Painting.
- B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
  - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- C. Water-Based Primer: Emulsion type, anticorrosive primer for mildly corrosive environments that is resistant to flash rusting when applied to cleaned steel, complying with MPI#107 and compatible with topcoat.
- D. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.
- E. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.
- F. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- G. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.
- H. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- I. Concrete: Comply with requirements in Section 033000 - Cast-in-Place Concrete for normal-weight, air-entrained, concrete with a minimum 28-day compressive strength of 3000 psi.

### **2.5 FABRICATION, GENERAL**

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

## **2.6 MISCELLANEOUS FRAMING AND SUPPORTS**

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
  - 1. Fabricate units from slotted channel framing where indicated.
  - 2. Furnish inserts for units installed after concrete is placed.
- C. Galvanize miscellaneous framing and supports where indicated.
- D. Prime miscellaneous framing and supports with zinc-rich primer indicated.

## **2.7 MISCELLANEOUS STEEL TRIM**

- A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.
- B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
  - 1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.
- C. Galvanize and prime exterior miscellaneous steel trim.

## **2.8 METAL BOLLARDS**

- A. Fabricate metal bollards from schedule 40 steel pipe, 1/4" thick, diameter as indicated.
- B. Prime bollards as specified in Section 09 91 13 - Exterior Painting.

## **2.9 LOOSE BEARING AND LEVELING PLATES**

- A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.
- B. Galvanize plates.
- C. Prime plates as specified in Section 09 91 13 - Exterior Painting.

## **2.10 LOOSE STEEL LINTELS**

- A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.
- B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than 8 inches unless otherwise indicated.
- C. Galvanize loose steel lintels located in exterior walls.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION, GENERAL**

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

### **3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS**

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.
- B. Anchor supports for securely to, and rigidly brace from, building structure.
- C. Support steel girders on solid grouted masonry, concrete, or steel pipe columns. Secure girders with anchor bolts embedded in grouted masonry or concrete or with bolts through top plates of pipe columns.
  - 1. Where grout space under bearing plates is indicated for girders supported on concrete or masonry, install as specified in "Installing Bearing and Leveling Plates" Article.
- D. Install pipe columns on concrete footings with grouted baseplates. Position and grout column baseplates as specified in "Installing Bearing and Leveling Plates" Article.
  - 1. Grout baseplates of columns supporting steel girders after girders are installed and leveled.

### **3.3 INSTALLING PREFABRICATED BUILDING COLUMNS**

- A. Install prefabricated building columns to comply with AISC 360, "Specifications for Structural Steel Buildings," and with requirements applicable to listing and labeling for fire-resistance rating indicated.

### **3.4 INSTALLING METAL BOLLARDS**

- A. Anchor bollards in place with concrete footings. Center and align bollards in holes 3 inches above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.

- B. Fill bollards solidly with concrete, mounding top surface to shed water.

**3.5 INSTALLING BEARING AND LEVELING PLATES**

- A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.
- B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

**3.6 ADJUSTING AND CLEANING**

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
  - 1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
- B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
- C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

**END OF SECTION**



**SECTION 05 52 13**  
**PIPE AND TUBE RAILINGS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Wall mounted handrails.
- B. Stair bar-stock railings and guardrails.
- C. Exterior stair railings.

**1.2 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete: Placement of anchors in concrete.
- B. Section 06 20 00 - Finish Carpentry: Wood handrail.
- C. Section 09 21 16 - Gypsum Board Assemblies: Placement of backing plates in stud wall construction.
- D. Section 09 91 13 - Exterior Painting: Paint finish.
- E. Section 09 91 23 - Interior Painting: Paint finish.

**1.3 REFERENCE STANDARDS**

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. AISC 201 - AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures; 2006.
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.
- D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- E. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2020.
- F. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- G. ASTM B177/B177M - Standard Guide for Engineering Chromium Electroplating; 2011 (Reapproved 2017).
- H. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2013, with Editorial Revision.
- I. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- J. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
  - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

**PART 2 PRODUCTS**

**2.1 RAILINGS - GENERAL REQUIREMENTS**

- A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.
- B. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds (890 N) applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.

- C. Allow for expansion and contraction of members and building movement without damage to connections or members.
- D. Dimensions: See drawings for configurations and heights.
- E. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
- F. Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

## **2.2 FABRICATION**

- A. Accurately form components to suit specific project conditions and for proper connection to building structure.
- B. Fit and shop assemble components in largest practical sizes for delivery to site.
- C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive work.

### **3.2 PREPARATION**

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.
- C. Apply one coat of bituminous paint to concealed aluminum surfaces that will be in contact with cementitious or dissimilar materials.

### **3.3 INSTALLATION**

- A. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- B. Anchor railings securely to structure.

**END OF SECTION**

**SECTION 06 10 00**  
**ROUGH CARPENTRY**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Framing with dimension lumber.
  - 2. Framing with engineered wood products.
  - 3. Wood blocking, cants, and nailers.
  - 4. Wood furring and grounds.
  - 5. Wood sleepers.
  - 6. Utility shelving.
  - 7. Plywood backing panels.
- B. Related Requirements:
  - 1. Section 06 16 00 - Sheathing for sheathing, subflooring, and underlayment.
  - 2. Section 06 17 53 - Shop-Fabricated Wood Trusses for wood trusses made from dimension lumber.

**1.3 DEFINITIONS**

- A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.
- B. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.
- C. Exposed Framing: Framing not concealed by other construction.
- D. OSB: Oriented strand board.

**1.4 ACTION SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
  - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
  - 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
  - 3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
  - 4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
- C. Fastener Patterns: Full-size templates for fasteners in exposed framing.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Engineered wood products.
3. Power-driven fasteners.
4. Post-installed anchors.
5. Metal framing anchors.

#### **1.6 QUALITY ASSURANCE**

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

#### **1.7 DELIVERY, STORAGE, AND HANDLING**

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

### **PART 2 - PRODUCTS**

#### **2.1 WOOD PRODUCTS, GENERAL**

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
1. Factory mark each piece of lumber with grade stamp of grading agency.
  2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece or omit grade stamp and provide certificates of grade compliance issued by grading agency.
  3. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent
- C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
1. Allowable design stresses, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

#### **2.2 WOOD-PRESERVATIVE-TREATED LUMBER**

- A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
  2. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by inspection agency.
- D. Application: Treat items indicated on Drawings, and the following:
1. Wood cants, nailers, curbs, equipment support bases, 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 and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18 inches above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

### **2.3 DIMENSION LUMBER FRAMING**

- A. Non-Load-Bearing Interior Partitions:
  1. Application: Interior partitions not indicated as load bearing.
  2. Species and grade: as indicated on drawings
- B. Load-Bearing Partitions:
  1. Application: Exterior walls- and interior load-bearing partitions.
  2. Species and grade: as indicated.
- C. Joists, Rafters, and Other Framing Not Listed Above:
  1. Species and grade: as indicated
- D. Exposed Framing Indicated to Receive a Stained or Natural Finish: Hand-select material for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.
  1. Species and Grade: As indicated.

### **2.4 ENGINEERED WOOD PRODUCTS**

- A. Source Limitations: Obtain each type of engineered wood product from single source from a single manufacturer.
- B. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.
  1. Extreme Fiber Stress in Bending, Edgewise: as indicated.
  2. Modulus of Elasticity, Edgewise: as indicated.
- C. Parallel-Strand Lumber: Structural composite lumber made from wood strand elements with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.
  1. Extreme Fiber Stress in Bending, Edgewise: as indicated.
  2. Modulus of Elasticity, Edgewise: as indicated.

### **2.5 MISCELLANEOUS LUMBER**

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
  1. Blocking.
  2. Nailers.
  3. Utility shelving.
- B. Dimension Lumber Items: As Indicated
- C. Utility Shelving: Lumber with 19 percent maximum moisture content of any of the following species and grades:
  1. Eastern white pine, Idaho white, lodgepole, ponderosa, or sugar pine; Standard or No. 3 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
  2. Mixed southern pine or southern pine; No. [1] [2] grade; SPIB.
  3. Hem-fir or hem-fir (north); Select Merchantable or No. 1 Common grade; NLGA, WCLIB, or WWPA.
  4. Spruce-pine-fir (south) or spruce-pine-fir; Select Merchantable or No. 1 Common grade; NeLMA, NLGA, WCLIB, or WWPA.

- D. Concealed Boards: 19 percent maximum moisture content and any of the following species and grades:
  - 1. Mixed southern pine or southern pine; No. 2 grade; SPIB.
  - 2. Hem-fir or hem-fir (north); Construction or No. 2 Common grade; NLGA, WCLIB, or WWPA.
  - 3. Spruce-pine-fir (south) or spruce-pine-fir; Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
- E. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- F. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- G. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

## **2.6 PLYWOOD BACKING PANELS**

- A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, A-C in thickness indicated or, if not indicated, not less than 1/2-inch nominal thickness.

## **2.7 FASTENERS**

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
  - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or Type 304 stainless steel.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193 or ICC-ES AC308 as appropriate for the substrate.
  - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
  - 2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

## **2.8 METAL FRAMING ANCHORS**

- A. Allowable design loads, as published by manufacturer, shall meet or exceed those of products of indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.
- B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.
  - 1. Use for interior locations unless otherwise indicated.
- C. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.
  - 1. Use for wood-preservative-treated lumber and where indicated.
- D. Joist Hangers: U-shaped joist hangers with 2-inch- long seat and 1-1/4-inch- wide nailing flanges at least 85 percent of joist depth, uno.
- E. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.
  - 1. Designed for connection of engineered wood products, sized to support design loads
- F. Bridging: Rigid, V-section, nailless type, 0.064 inch thick, length to suit joist size and spacing.

- G. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch above base and with 2-inch- minimum side cover, socket 0.062 inch thick, and standoff and adjustment plates 0.108 inch thick.
- H. Rafter Tie-Downs: Bent strap tie for fastening rafters or roof trusses to wall studs below, 1-1/2 inches wide by 0.050 inch thick. Tie fastens to side of rafter or truss, face of top plates, and side of stud below.
- I. Rafter Tie-Downs (Hurricane): As indicated
- J. Hold-Downs: Brackets for bolting to wall studs and securing to foundation walls with anchor bolts or to other hold-downs with threaded rods and designed with first of two bolts placed seven bolt diameters from reinforced base as indicated.

## 2.9 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to suit width of sill members indicated.
- B. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.
- C. Adhesives for Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.
  - 1. Use adhesives that have a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), or as listed in VOC limit tables in Section 01 81 19 "Indoor Air Quality Requirements". Products furnished shall comply with whichever VOC content requirement is more stringent.
- D. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant-treated plywood backing panels with classification marking of testing agency exposed to view.
- E. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- F. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.
- G. Do not splice structural members between supports unless otherwise indicated.
- H. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
  - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.
- I. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
  - 1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
  - 2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal thickness.

3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. and to solidly fill space below partitions.
  4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet o.c.
- J. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- K. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
1. Use inorganic boron for items that are continuously protected from liquid water.
  2. Use copper naphthenate for items not continuously protected from liquid water.
- L. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- M. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
- N. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.
- O. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
1. Use finishing nails unless otherwise indicated. Countersink nail heads and fill holes with wood filler.

### **3.2 WOOD BLOCKING, AND NAILER INSTALLATION**

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

### **3.3 WOOD FURRING INSTALLATION**

- A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

### **3.4 WALL AND PARTITION FRAMING INSTALLATION**

- A. General: Provide single bottom plate and double top plates using members of 2-inch nominal thickness whose widths equal that of studs, except single top plate may be used for non-load-bearing partitions. Fasten plates to supporting construction unless otherwise indicated.
- B. Construct corners and intersections with three or more studs, except that two studs may be used for interior non-load-bearing partitions.
- C. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Support headers on jamb studs.
  1. For non-load-bearing partitions, provide double-jamb studs and headers not less than 4-inch nominal depth for openings 36 inches and less in width, 6-inch nominal depth for openings 36 to 72 inches in width, 8-inch nominal depth for openings 72 to 120 inches in width, and not less than 10-inch nominal depth for openings 10 to 12 feet in width.
  2. For load-bearing walls, as indicated.

### **3.5 PROTECTION**

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.



- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet enough that moisture content exceeds that specified apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

**END OF SECTION**

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**SECTION 06 16 00**  
**SHEATHING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Wall sheathing.
  - 2. Roof sheathing.
  - 3. Parapet sheathing.
- B. Related Requirements:
  - 1. Section 06 10 00 - Rough Carpentry for plywood backing panels.
  - 2. Section 07 25 00 - Weather Barriers for water-resistive barrier applied over wall sheathing.

**1.3 ACTION SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
  - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.
  - 2. For products receiving waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
  - 3. For air-barrier and water-resistant glass-mat gypsum sheathing, include manufacturer's technical data and tested physical and performance properties of products.
- C. Shop Drawings: For air-barrier and water-resistant glass-mat gypsum sheathing assemblies.
  - 1. Show locations and extent of sheathing, accessories, and assemblies specific to Project conditions.
  - 2. Include details for sheathing joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
  - 3. Include details of interfaces with other materials that form part of air barrier.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Product Certificates: From air-barrier and water-resistant glass-mat gypsum sheathing manufacturer, certifying compatibility of sheathing accessory materials with Project materials that connect to or that come in contact with the sheathing.
- B. Product Test Reports: For each air-barrier and water-resistant glass-mat gypsum sheathing assembly, indicating compliance with specified requirements, for tests performed by a qualified testing agency.
- C. Evaluation Reports: For the following, from ICC-ES:
  - 1. Wood-preservative-treated plywood.
  - 2. Foam-plastic sheathing.
  - 3. Air-barrier and water-resistant glass-mat gypsum sheathing.
- D. Field quality-control reports.

## **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

## **PART 2 - PRODUCTS**

### **2.1 WOOD PANEL PRODUCTS**

- A. Emissions: Products shall meet the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- B. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.
- C. Factory mark panels to indicate compliance with applicable standard.

### **2.2 PRESERVATIVE-TREATED PLYWOOD**

- A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.
- C. Application: Treat items indicated on Drawings.

### **2.3 FIRE-RETARDANT-TREATED PLYWOOD**

- A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Kiln-dry material after treatment to a maximum moisture content of 15 percent. Do not use material that is warped or does not comply with requirements for untreated material.
- C. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.
- D. Application: Treat plywood indicated on Drawings

### **2.4 WALL AND PARAPET SHEATHING**

- A. Plywood Sheathing: As indicated on drawings.
- B. Oriented-Strand-Board Sheathing: As indicated on drawings

### **2.5 ROOF SHEATHING**

- A. Oriented-Strand-Board Sheathing: As indicated on drawings

### **2.6 FASTENERS**

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  - 1. For roof, parapet and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Screws for Fastening Sheathing to Wood Framing: ASTM C 1002.
- E. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

## **2.7 MISCELLANEOUS MATERIALS**

- A. Adhesives for Field Gluing Panels to Wood Framing: Formulation complying with [APA AFG-01] [ASTM D 3498] that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION, GENERAL**

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
  - 1. Table 2304.9.1, "Fastening Schedule," in the ICC's International Building Code.
  - 2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in the ICC's International Residential Code for One- and Two-Family Dwellings.
  - 3. ICC-ES evaluation report for fastener.
- D. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.
- E. Coordinate wall parapet and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.
- G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

### **3.2 WOOD STRUCTURAL PANEL INSTALLATION**

- A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

**END OF SECTION**

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**SECTION 06 17 53**  
**SHOP-FABRICATED WOOD TRUSSES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Wood roof trusses.
  - 2. Wood girder trusses.

**1.3 DEFINITIONS**

- A. Metal-Plate-Connected Wood Trusses: Planar structural units consisting of metal-plate-connected members fabricated from dimension lumber and cut and assembled before delivery to Project site.

**1.4 ACTION SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Shop Drawings: Show fabrication and installation details for trusses.
  - 1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
  - 2. Indicate sizes, stress grades, and species of lumber.
  - 3. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.
  - 4. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.
  - 5. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
  - 6. Show splice details and bearing details.
- C. Delegated-Design Submittal: For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Material Certificates: For dimension lumber specified to comply with minimum specific gravity. Indicate species and grade selected for each use and specific gravity.
- B. Evaluation Reports: For the following, from ICC-ES:
  - 1. Metal-plate connectors.
  - 2. Metal truss accessories.

**1.6 QUALITY ASSURANCE**

- A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.
  - 1. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program, complies with quality-control procedures in TPI 1, and involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.

## **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Handle and store trusses to comply with recommendations in SBCA BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."
  - 1. Store trusses flat, off of ground, and adequately supported to prevent lateral bending.
  - 2. Protect trusses from weather by covering with waterproof sheeting, securely anchored.
  - 3. Provide for air circulation around stacks and under coverings.
- B. Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal-plate-connected wood trusses.
- B. Structural Performance: Metal-plate-connected wood trusses shall be capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.
  - 1. Design Loads: As indicated.
  - 2. Maximum Deflection under Design Loads: As indicated
- C. Comply with applicable requirements and recommendations of TPI 1, TPI DSB, and SBCA BCSI.
- D. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

### **2.2 DIMENSION LUMBER**

- A. Lumber: DOC PS 20 and applicable rules of any rules-writing agency certified by the American Lumber Standard Committee (ALSC) Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
  - 1. Factory mark each piece of lumber with grade stamp of grading agency.
  - 2. Provide dressed lumber, S4S.
  - 3. Provide dry lumber with 19 percent maximum moisture content at time of dressing.
- B. Minimum Specific Gravity for Top Chords: 0.50 .
- C. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Section 061000 "Rough Carpentry".

### **2.3 METAL CONNECTOR PLATES**

- A. General: Fabricate connector plates to comply with TPI 1.
- B. Hot-Dip Galvanized-Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 coating designation; and not less than 0.036 inch thick.
  - 1. Use for interior locations unless otherwise indicated.

### **2.4 FASTENERS**

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  - 1. Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.
- B. Nails, Brads, and Staples: ASTM F 1667.



## **2.5 METAL FRAMING ANCHORS AND ACCESSORIES**

- A. Allowable design loads, as published by manufacturer, shall comply with or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.
- B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.
  - 1. Use for interior locations unless otherwise indicated.
- C. Truss Tie-Downs (Hurricane or Seismic Ties): As indicated on drawings

## **2.6 MISCELLANEOUS MATERIALS**

- A. Galvanizing Repair Paint: SSPC-Paint 20, with dry film containing a minimum of 92 percent zinc dust by weight.

## **2.7 FABRICATION**

- A. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.
- B. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.
- C. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly, with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.
  - 1. Fabricate wood trusses within manufacturing tolerances in TPI 1.
- D. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install wood trusses only after supporting construction is in place and is braced and secured.
- B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.
- C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
- D. Install and brace trusses according to TPI recommendations and as indicated.
- E. Install trusses plumb, square, and true to line and securely fasten to supporting construction.
- F. Space trusses indicated; adjust and align trusses in location before permanently fastening.
- G. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.
- H. Securely connect each truss ply required for forming built-up girder trusses.
  - 1. Anchor trusses to girder trusses as indicated.
- I. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
  - 1. Install bracing to comply with Section 061000 "Rough Carpentry."
  - 2. Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.
- J. Install wood trusses within installation tolerances in TPI 1.
- K. Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.
- L. Replace wood trusses that are damaged or do not comply with requirements.
  - 1. Damaged trusses may be repaired according to truss repair details signed and sealed by the qualified professional engineer responsible for truss design, when approved by Architect.

**3.2 REPAIRS AND PROTECTION**

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect wood trusses from weather. If, despite protection, wood trusses become wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- C. Repair damaged galvanized coatings on exposed surfaces according to ASTM A 780/A 780M and manufacturer's written instructions.

**3.3 FIELD QUALITY CONTROL**

- A. Special Inspections: Owner will engage a qualified special inspector to perform special inspections to verify that temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package.

**END OF SECTION**

**SECTION 06 20 00**  
**FINISH CARPENTRY**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Finish carpentry items.
- B. Wood casings and moldings.
- C. Hardware and attachment accessories.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 06 41 00 - Architectural Wood Casework: Shop fabricated custom cabinet work.
- C. Section 08 14 16 - Flush Wood Doors.
- D. Section 09 91 23 - Interior Painting: Painting of finish carpentry items.

**1.3 REFERENCE STANDARDS**

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ANSI A135.4 - American National Standard for Basic Hardboard; 2012.
- C. ANSI A208.1 - American National Standard for Particleboard; 2016.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- E. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2018).
- F. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; 2017, with Errata (2019).
- G. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2016.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data:
  - 1. Provide instructions for attachment hardware, finish hardware.
- C. Samples: Submit two samples of wood trim 8 inches long, stained and varnished.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Store finish carpentry items under cover, elevated above grade, and in a dry, well-ventilated area not exposed to heat or sunlight.
- B. Protect from moisture damage.
- C. Handle materials and products to prevent damage to edges, ends, or surfaces.

**PART 2 PRODUCTS**

**2.1 FINISH CARPENTRY ITEMS**

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Interior Woodwork Items:
  - 1. Moldings, Bases, Casings, and Miscellaneous Trim: Red Oak, prepare for staining and transparent finish.
  - 2. Window Sills: Solid surface material as specified on Drawing Sheet A811.

## **2.2 SHEET MATERIALS**

- A. Hardwood Plywood: Face species of Red Oak, plain sawn, book matched, medium density fiberboard core; HPVA HP-1, Front Face Grade AA, Back Face Grade 1, glue type as recommended for application.
- B. Hardboard: ANSI A135.4; Pressed wood fiber with resin binder, Class 1 - Tempered, 1/4 inch (6 mm) thick, smooth one side (S1S).

## **2.3 FASTENINGS**

- A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.
- B. Fasteners: Of size and type to suit application.

## **2.4 ACCESSORIES**

- A. Adhesive: Type recommended by fabricator to suit application.
- B. Primer: Alkyd primer sealer.
- C. Wood Filler: Solvent base, tinted to match surface finish color.

## **2.5 SITE FINISHING MATERIALS**

- A. Stain, Varnish, and Finishing Materials: In compliance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Provide color as selected by Architect.

## **2.6 FABRICATION**

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

## **2.7 SHOP FINISHING**

- A. Sand work smooth and set exposed nails and screws.
- B. Apply wood filler in exposed nail and screw indentations.
- C. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.
- D. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
  - 1. Transparent:
    - a. System - 1, Lacquer, Nitrocellulose.
    - b. Stain: As selected by Architect.
    - c. Sheen: Satin.
- E. Back prime woodwork items to be field finished, prior to installation.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

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

### **3.2 INSTALLATION**

- A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
- B. Set and secure materials and components in place, plumb and level.

- C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch (0.79 mm). Do not use additional overlay trim to conceal larger gaps.

### **3.3 PREPARATION FOR SITE FINISHING**

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
- B. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

**END OF SECTION**

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**SECTION 06 41 00**  
**ARCHITECTURAL WOOD CASEWORK**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Specially fabricated cabinet units.
- B. Countertops.
- C. Hardware.
- D. Factory finishing.
- E. Preparation for installing utilities.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 09 91 23 - Interior Painting: Field finishing of cabinet exterior.

**1.3 REFERENCE STANDARDS**

- A. AWI (QCP) - Quality Certification Program; Current Edition.
- B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; 2017, with Errata (2019).
- C. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2016.
- D. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
  - 1. Scale of Drawings: 1-1/2 inch to 1 foot (125 mm to 1 m), minimum.
  - 2. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
- C. Product Data: Provide data for hardware accessories.
- D. Samples: Submit actual samples of architectural cabinet construction, minimum 8 inches (200 mm) square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.
- E. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

**1.5 QUALITY ASSURANCE**

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
  - 1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
  - 2. Single Source Responsibility: Provide and install this work from single fabricator.
- B. Quality Certification:
  - 1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: [www.awiqcp.org/#sle](http://www.awiqcp.org/#sle).

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Protect units from moisture damage.

**1.7 FIELD CONDITIONS**

- A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

## **PART 2 PRODUCTS**

### **2.1 CABINETS**

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Plastic Laminate Faced Cabinets: Custom grade.
- C. Cabinets at \_\_\_\_\_:
  - 1. Adjustable Shelf Loading: 50 lbs. per sq. ft.
    - a. Deflection: L/144.
  - 2. Cabinet Style: Flush overlay.
  - 3. Cabinet Doors and Drawer Fronts: Flush style.
  - 4. Drawer Side Construction: Multiple-dovetailed.
  - 5. Drawer Construction Technique: Dovetail joints.

### **2.2 WOOD-BASED COMPONENTS**

- A. Wood fabricated from old growth timber is not permitted.

### **2.3 LAMINATE MATERIALS**

- A. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
- B. Provide specific types as specified on Drawing Sheet A811.

### **2.4 COUNTERTOPS**

- A. Solid Surface Countertops as specified on Drawing Sheet A811.

### **2.5 ACCESSORIES**

- A. Adhesive: Type recommended by fabricator to suit application.
- B. Fasteners: Size and type to suit application.
- C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.
- D. Concealed Joint Fasteners: Threaded steel.
- E. Adjustable Drawer Organization Systems: Drawer trays, dividers, and connectors.
  - 1. Products:
    - a. Blum, Inc; AMBIA-LINE; [www.blum.com/#sle](http://www.blum.com/#sle).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.
- F. Grommets: Standard plastic, painted metal, or rubber grommets for cut-outs, in color to match adjacent surface.

### **2.6 HARDWARE**

- A. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards or multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch (25 mm) spacing adjustments.
- B. Drawer and Door Pulls: "U" shaped wire pull, steel with chrome finish, 4 inch centers ("U" shaped wire pull, steel with chrome finish, 100 mm centers).
- C. Drawer Slides:
  - 1. Type: Extension types as indicated.
  - 2. Static Load Capacity: Commercial grade.
  - 3. Mounting: Bottom mounted.
  - 4. Stops: Integral type.
  - 5. Features: Provide self closing/stay closed type.
  - 6. Manufacturers:
    - a. Accuride International, Inc; Heavy-Duty Drawer Slides: [www accuride.com/#sle](http://www accuride.com/#sle).
    - b. Blum, Inc; MOVENTO: [www.blum.com/#sle](http://www.blum.com/#sle).
    - c. Knappe & Vogt Manufacturing Company; Heavy-Duty Drawer Slides: [www.knapeandvogt.com/#sle](http://www.knapeandvogt.com/#sle).



- d. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Hinges: European style concealed self-closing type, steel with nickel-plated finish.
  - 1. Manufacturers:
    - a. Blum, Inc; CLIP top BLUMOTION: [www.blum.com/#sle](http://www.blum.com/#sle).
    - b. Grass America Inc: [www.grassusa.com/#sle](http://www.grassusa.com/#sle).
    - c. Hardware Resources: [www.hardwareresources.com/#sle](http://www.hardwareresources.com/#sle).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.

## **2.7 SITE FINISHING MATERIALS**

- A. Stain, Shellac, Varnish, and Finishing Materials: In compliance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

## **2.8 FABRICATION**

- A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- B. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- C. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet (600 mm) from sink cut-outs.
  - 1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
  - 2. Cap exposed plastic laminate finish edges with material of same finish and pattern.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with work of this section.

### **3.2 INSTALLATION**

- A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
- B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- C. Use concealed joint fasteners to align and secure adjoining cabinet units.
- D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch (0.79 mm). Do not use additional overlay trim for this purpose.

### **3.3 ADJUSTING**

- A. Adjust installed work.
- B. Adjust moving or operating parts to function smoothly and correctly.

### **3.4 CLEANING**

- A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

**END OF SECTION**

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**SECTION 07 01 50.19**  
**PREPARATION FOR RE-ROOFING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Partial replacement of existing roofing system in preparation for replacement roofing system in designated areas as indicated on drawings.
- B. Removal of existing roof asphalt shingles and underlayment.
- C. Removal of existing flashing and counterflashings.
- D. Removal and replacement of existing roof sheathing where required.
- E. Temporary roofing protection.

**1.2 RELATED REQUIREMENTS**

- A. Section 01 74 10 – Construction Waste Management, Disposal and Recycling.
- B. Section 06 10 00 - Rough Carpentry.
- C. Section 06 16 00 – Sheathing.
- D. Section 07 31 13 - Asphalt Shingles.

**1.3 REFERENCE STANDARDS**

- A. PS 2 - Performance Standard for Wood-Based Structural-Use Panels; 2010.

**1.4 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate with affected mechanical and electrical work associated with roof penetrations.
- B. Schedule work to coincide with commencement of installation of new roofing system.

**1.5 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Submit for each type of material.

**1.6 FIELD CONDITIONS**

- A. Do not remove existing roofing shingle and underlayment when weather conditions threaten the integrity of building contents or intended continued occupancy.
- B. Maintain continuous temporary protection prior to and during installation of new roofing system.
- C. Provide notice at least five days before starting activities that will affect normal building operations.

**PART 2 PRODUCTS**

**2.1 COMPONENTS**

- A. Refer to following sections for additional information on components relating to this work:
  - 1. Remove existing roofing system in preparation for new roofing system in designated areas as indicated on drawings, refer to Section 07 31 13 - Asphalt Shingles.
  - 2. Remove existing flashing and counterflashings in preparation for replacement of these materials as part of this work, refer to Section 07 31 13 - Asphalt Shingles for material requirements.

**2.2 MATERIALS**

- A. Replacement Sheathing: Replace all moisture damaged roof sheathing with new sheathing as specified in Section 06 16 00 - Sheathing. Match thickness of existing sheathing.

### **2.3 ACCESSORIES**

- A. Fasteners: Type and size as required and compatible with existing and new roofing system to resist local wind uplift.

### **PART 3 EXECUTION**

#### **3.1 MATERIAL REMOVAL**

- A. Remove only existing roofing materials that can be replaced with new materials the same day.
- B. Remove metal counter flashings.
- C. Repair and or replace as needed any existing moisture damaged sheathing, or any sheathing damaged during demolition. Provide a smooth working surface for new roof system.

#### **3.2 INSTALLATION**

- A. Coordinate scope of this work with requirements for installation of new roofing system, refer to Section 07 31 13 - Asphalt Shingles for additional requirements.

**END OF SECTION**

**SECTION 07 05 53**  
**FIRE AND SMOKE ASSEMBLY IDENTIFICATION**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Identification markings for fire and smoke rated partitions, and fire rated walls.

**1.2 RELATED REQUIREMENTS**

- A. Section 09 91 23 - Interior Painting: Paint finish.

**1.3 REFERENCE STANDARDS**

- A. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed product literature for each type of marking, indicating font, foreground and background colors, wording, and overall dimensions.

**PART 2 PRODUCTS**

**2.1 FIRE AND SMOKE ASSEMBLY IDENTIFICATION**

- A. Regulatory Requirements: Comply with "Marking and Identification" requirements of "Fire-Resistance Ratings and Fire Tests" chapter of ICC (IBC).
- B. Adhered Fire and Smoke Assembly Identification Signs: Printed vinyl sign with factory applied adhesive backing, or, identification markings applied to partition with paint and a code compliant stencil.
- C. Languages: Provide sign markings in English.

**PART 3 EXECUTION**

**3.1 EXAMINATION**

- A. Verify that substrate surfaces are ready to receive work.

**3.2 PREPARATION**

- A. See Section 09 91 23 for substrate preparation for painted markings.

**3.3 INSTALLATION**

- A. Locate markings as required by ICC (IBC).
- B. Install adhered markings in accordance with manufacturer's instructions, or install paint-applied stencil markings in accordance with Section 09 91 23.
- C. Install neatly, with horizontal edges level.
- D. Protect from damage until Date of Substantial Completion; repair or replace damaged markings.

**END OF SECTION**

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**SECTION 07 14 00**  
**FLUID-APPLIED WATERPROOFING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Fluid-Applied Waterproofing:
  - 1. Cold-applied modified-polymer elastomeric waterproofing.

**1.2 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete substrate.
- B. Section 04 20 00 - Unit Masonry: Masonry joints prepared to receive flashings.
- C. Section 07 92 00 - Joint Sealants: Sealing moving joints in waterproofed surfaces that are not part of work in this section.

**1.3 REFERENCE STANDARDS**

- A. ASTM C836/C836M - Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course; 2018.
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016.
- C. NRCA (WM) - The NRCA Waterproofing Manual; 2005.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide data for membrane, surface conditioner, flexible flashings, joint cover sheet, and joint and crack sealants.
- C. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and acceptable installation temperatures.

**1.5 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

**1.6 FIELD CONDITIONS**

- A. Maintain ambient temperatures above 40 degrees F (5 degrees C) for 24 hours before and during application and until cured.

**PART 2 PRODUCTS**

**2.1 FLUID APPLIED WATERPROOFING MATERIALS**

- A. Cold-Applied Modified-Polymer Elastomeric Waterproofing:
  - 1. Cured Thickness: 55 mils, 0.055 inch (1.397 mm), minimum.
  - 2. Suitable for installation over concrete and masonry substrates.
  - 3. Basis-of-Design: W.R. Meadows, Inc; MEL-ROL LM, all season waterproofing system: [www.wrmeadows.com](http://www.wrmeadows.com).

**PART 3 EXECUTION**

**3.1 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify substrate surfaces are free of frozen matter, dampness, loose particles, cracks, pits, projections, penetrations, or foreign matter detrimental to adhesion or application of waterproofing system.

- C. Verify that substrate surfaces are smooth, free of honeycomb or pitting, and not detrimental to full contact bond of waterproofing materials.
- D. Verify items that penetrate surfaces to receive waterproofing are securely installed.

### **3.2 PREPARATION**

- A. Protect adjacent surfaces from damage not designated to receive waterproofing.
- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions; vacuum substrate clean.
- C. Do not apply waterproofing to surfaces unacceptable to waterproofing manufacturer.
- D. Fill non-moving joints and cracks with a filler compatible with waterproofing materials.
- E. Seal moving cracks with sealant and non-rigid filler, using procedures recommended by sealant and waterproofing manufacturers.
- F. Install cant strips at inside corners.

### **3.3 INSTALLATION**

- A. Install waterproofing to specified minimum thickness in accordance with manufacturers instructions and NRCA (WM) applicable requirements.
- B. Seal membrane and flashings to adjoining surfaces.

### **3.4 PROTECTION**

- A. Do not permit traffic over unprotected or uncovered membrane.

**END OF SECTION**



**SECTION 07 21 00**  
**THERMAL INSULATION**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Glass Mat Faced and Non-Glass Mat Faced Board Insulation.
- B. Batt Insulation.
- C. Foamed-in-Place Insulation.
- D. Blown Insulation.
- E. Accessories.

**1.2 RELATED REQUIREMENTS**

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 06 10 00 - Rough Carpentry.
- C. Section 07 25 00 - Weather Barriers.

**1.3 REFERENCE STANDARDS**

- A. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- B. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation; 2017, with Editorial Revision (2018).
- C. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2019.
- D. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- F. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- G. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C; 2019a.
- H. ASTM E1414/E1414M - Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum; 2016.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

**1.5 FIELD CONDITIONS**

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

**PART 2 PRODUCTS**

**2.1 APPLICATIONS**

- A. Refer to Drawings.

**2.2 FOAM BOARD INSULATION MATERIALS (Non-Glass Mat Faced)**

- A. Extruded Polystyrene (XPS) Continuous Insulation (CI) Board: Complies with ASTM C578, and manufactured using carbon black technology.
  - 1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
  - 2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.

3. Type and Thermal Resistance, R-value (RSI-value): Type IV, 5.0 (0.88), minimum, per 1 inch (25.4 mm) thickness at 75 degrees F (24 degrees C) mean temperature.
4. Board Size: 48 inch by 96 inch (1220 mm by 2440 mm).
5. Board Thickness: Refer to Drawings.
6. Board Edges: Shiplap, at long edges.

### 2.3 GLASS MAT FACED POLYISOCYANURATE FOAM BOARD INSULATION MATERIALS

- A. Glass Mat Faced Polyisocyanurate Insulation: High performance rigid board insulation complying with ASTM C1289 Type II, Class 2, Grade 2 consisting of a Class A closed cell polyisocyanurate foam core laminated between a coated glass mat facer on each side of board and the following characteristics:
  1. Flame Spread and Smoke Developed: Less than 75 and less than 450, respectively, when tested in accordance with ASTM E 84.
  2. Moisture Vapor Transmission: Less than 1.2 when tested in accordance with ASTM E 96, Desiccant Method.
  3. R-value; 1 inch of material at 72 degrees F: 6, minimum.
  4. Compressive Strength: Meets or exceeds Type II when tested in accordance with ASTM C 1289.
  5. Water Absorption: Less than 1% by volume when tested in accordance with ASTM C 209.
  6. Dimensional Stability: Less than 1% linear change when tested in accordance with ASTM D 2126.
  7. Service Temperatures: -100°F to + 250°F (-73°C to +122°C)
  8. Auto-Ignition Temperature: 800°F
  9. Thickness: As indicated on the drawings.
- B. Basis-of-Design: Atlas Roofing Corporation "Rboard"; [www.atlasroofing.com](http://www.atlasroofing.com).
- C. Accessories:
  1. Insulation Adhesive: High strength, heavy-bodied, thermoplastic rubber adhesive formulated to bond insulation to metal, concrete or masonry surfaces.  
Product: Subject to compliance with the requirements, provide one of the following:
    - a. GM Industries GPA-72 Adhesive.
    - b. Loctite PL 300 VOC.
    - c. BASF Sonneborn Premium Adhesive
    - d. Other products approved in writing by the board insulation manufacturer.
  2. Mechanical Fasteners: Low profile, 2 inch (50 mm) diameter high-density polypropylene washer and screw assembly designed specifically to fasten insulation board to designated substrate.  
Product: Subject to compliance with the requirements, provide one of the following:
    - a. Rodenhouse, Inc. fasteners as approved in writing by the manufacturer for the intended substrate.
    - b. Wind-Lock fasteners as approved in writing by the fastener manufacturer for the intended substrate.
    - c. Other products approved in writing by the board insulation manufacturer.
  3. Joint Sealant: Single component, non-shrink joint sealants and backings which are compatible with each other and other materials in the assembly.  
Product: Subject to compliance with the requirements, provide one of the following:
    - a. Sikaflex-1A and 2C NS
    - b. PecoraDynotrol I & II
    - c. Sonneborn NP1 & NP
    - d. Dow 790, 791, 795
    - e. GE Silpruf, Silpruf LM
    - f. Pecora 890, 895
    - g. Loctite PL 300 Foamboard adhesive.
    - h. BASF Sonneborn Premium Adhesive.
    - i. Other joint sealant approved in writing by the Manufacturer.
  4. Expanding Foam Sealant: Single component, non-shrink, Class A polyurethane insulating foam that is compatible with board insulation board; Complies with ASTM E814 Standard Test Method for Fire Tests of Through-Penetration Fire Stops; air and vapor permeance not greater than insulating board.  
Product: Subject to compliance with the requirements, provide one of the following:
    - a. Dow Great Stuff Pro Gaps & Cracks Insulating Foam Sealant.
    - b. FOMO Products, Inc.; Handi-Foam Fireblock Sealant.
    - c. Other products approved in writing by the board insulation manufacturer.
  5. Joint Tape: Self-adhering, glass fiber tape, minimum 3 inch (76 mm) wide with high temperature acrylic adhesive intended for adhesion to coated glass substrate.  
Product: Subject to compliance with the requirements, provide one of the following:

- a. IPG Cold Weather Aluminum Foil Tape.
- b. Atlas WRB Tape.
- c. Other products approved in writing by the board insulation manufacturer.

## 2.4 BATT INSULATION MATERIALS

- A. Where batt insulation is indicated, either glass fiber or mineral fiber batt insulation may be used, at Contractor's option.
- B. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
  - 1. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
- C. Mineral Fiber Batt Insulation: Flexible or semi-rigid preformed batt or blanket, complying with ASTM C665; friction fit; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E84.
  - 1. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E84.

## 2.5 FOAMED-IN-PLACE INSULATION

- A. Closed-Cell, Spray-Applied, Polyurethane Foam Insulation:
  - 1. Performance and Design Requirements:
    - a. Contains zero ozone depleting agents, catalysts, polyols, and fire retarding materials.
    - b. Fills cracks, crevices, and voids to form air seal and thermal insulation.
    - c. Evaluation Report: ICC-ESR Pending Publication.
  - 2. Physical Properties:
    - a. Density (ASTM D 1622): 2.0 lb/cf.
    - b. Thermal Resistance (ASTM C 518): R-6.9 (sf.h degree F/BTU) at 1 inch at 90 days at 76 degree F (24.4 degree C)
    - c. Closed Cell Content (ASTM D 6226): Minimum 92 percent.
    - d. Water Vapor Transmission -Permeance (ASTM E 96): 0.8 Perms at 1 inch, 0.23 at 3.5 inches.
    - e. Air Leakage (ASTM E 283): Zero at 75 Pa.f. Compressive Strength (ASTM D 1621): 20 psi.
    - g. Tensile Strength (ASTM D 1623): 60 lbf/sq. inch (414 kPa).
    - h. Dimensional Stability (ASTM D 2126): Less than 5 percent.i. Fungi Resistance (ASTM G 21): Zero rating
    - j. Surface Burning Characteristics (ASTM E84): Class 1 Pass, Flame Spread Index less than 25, Smoke Developed Index less than 450.
- B. Manufacturers:
  - 1. SealTite Pro Closed Cell Spray-Applied Polyurethane Foam Insulation, Carlisle, [www.carlisesfi.com](http://www.carlisesfi.com)
  - 2. Icynene ProSeal™ Spray-Applied, Polyurethane Foam Insulation, Icynene Inc., [www.Icynene.com](http://www.Icynene.com).
  - 3. Thermoseal 2000 Spray-Applied, Polyurethane Foam Insulation, Thermoseal, LLC, [www.thermosealusa.com](http://www.thermosealusa.com).
  - 4. Substitutions: See Section 01 00 00 General Requirements.
- E. Accessories:
  - 1. Roof Ventilation Baffles: Prefabricated PVC ventilation channels for placement under roof sheathing, width to match roof truss spacing.

## 2.6 BLOWN INSULATION

- A. Applications: Provide blown insulation in attic as indicated on drawings.
- B. Provide blown insulation in accordance with requirements of Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- C. Thermal Resistance [R-value (RSI-value)]: Provided minimum values in accordance with applicable edition of ASHRAE Std 90.1 I-P for envelope requirements of building location and climate zone.
- E. Accessories:
  - 1. Roof Ventilation Baffles: Prefabricated PVC ventilation channels for placement under roof sheathing with baffles to prevent wind-washing, width to match roof truss spacing
    - a. Material: Polyvinyl chloride (PVC).

## 2.7 ACCESSORIES

- A. Interior Vapor Retarder: Modified polyethylene/polyacrylate (PE/PA) film reinforced with polyethylene terephthalate (PET) fibers, 6 mils thick.

- B. Tape: Reinforced polyethylene film with acrylic pressure sensitive adhesive.
  1. Application: Sealing of interior circular penetrations, such as pipes or cables.
  2. Width: Are required for application.
- C. Flashing Tape: Special reinforced film with high performance adhesive.
  1. Application: Window and door opening flashing tape.
  2. Width: As required for application.
- D. Tape joints of rigid insulation in accordance with roofing and insulation manufacturers' instructions..
- E. Insulation Fasteners: Fasteners as recommended by manufacturer.
- F. Adhesive: Type recommended by insulation manufacturer for application.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. install each insulation type in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- C. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.
- D. At wood framing, place vapor retarder on warm side of insulation by stapling at 6 inches (152 mm) on center. Lap and seal sheet retarder joints over face of member.
- E. At wood framing, place vapor retarder on warm side of insulation by stapling at 6 inches (152 mm) on center. Lap and seal sheet retarder joints over face of member.
- F. Tape seal tears or cuts in vapor retarder.
- G. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane. Tape seal in place.
- H. Tape seal tears or cuts in vapor retarder.
- I. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane. Tape seal in place.

#### **3.2 BOARD INSTALLATION UNDER CONCRETE SLABS**

- A. Place insulation under slabs on grade after base for slab has been compacted.
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

#### **3.3 BOARD INSTALLATION AT FOUNDATION PERIMETER**

- A. Install boards vertically on foundation perimeter where indicated on Drawings.
  1. Butt edges and ends tightly to adjacent boards and to protrusions.
  2. Start board installation flush with foundation wall corner. Extend board end on opposite side of same corner to overlap end of first panel.
  3. Fit panel bottom ends tight to tops of spread footings.
- B. Extend boards over expansion joints, unbonded to foundation on one side of joint.
- C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

#### **3.4 GLASS MAT FACED BOARD INSTALLATION AT PERIMETER OF EXTERIOR WALLS**

- A. Joint Sealant: For joints, gaps, and openings less than ½ inch wide, install continuous bead of joint sealant. Provide backer rod as required to prohibit joint sealant from bonding to a third surface.
- B. C. Expanding Foam Sealant: For joints, gaps, and openings greater than ½ inch wide, install sealant in a continuous ribbon between adjacent board edges, working sealant in to joint for a full depth bead of sealant.
- C. Tape: Install tape evenly between adjacent boards in continuous pieces using longest practicable lengths. Where splices are required, provide laps no less than 6 inches.

1. Install tape over horizontal joints with 2/3 of the tape on the insulation board above and 1/3 of the tape on the insulation board below.
2. Continue taping vertical and horizontal seams up the building, ensuring that horizontal seams are taped first where horizontal and vertical tapes intersect.
3. Firmly roll tape with "J" roller to displace air pockets and to ensure complete attachment of tape to board insulation boards.

### **3.5 BATT INSTALLATION**

- A. Install insulation in accordance with manufacturer's instructions.
- B. Install in exterior wall cavities as indicated on drawings.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Do not compress insulation.

### **3.6 FOAM-IN-PLACE INSTALLATION**

- A. Install in locations as indicated on drawings.
- B. Mask and protect adjacent surfaces from over spray or dusting.
- C. Apply primer in accordance with manufacturer's instructions.
- D. Apply insulation by spray method, to a uniform monolithic density without voids.
- E. In exposed areas apply overcoat, apply monolithically, without voids to fully cover foam insulation, to achieve fire rating required.
- F. Patch damaged areas.
- G. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.

### **3.7 PROTECTION**

- A. Do not permit subsequent construction work to disturb applied insulation.
- B. Do not permit installed insulation to be damaged prior to its concealment.
- C> Protect polyisocyanurate rigid foam board wall insulation from excess moisture, mechanical damage, and exposure to open flame.
- D> Promptly repair damage caused to insulation in a manner that retains integrity and continuity of insulation and facer materials.

**END OF SECTION**

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**SECTION 07 25 00**  
**WEATHER BARRIERS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Water-Resistive Barrier: Under exterior brick veneer, installed onto exterior wall sheathing.

**1.2 RELATED REQUIREMENTS**

- A. Section 04 20 00 – Unit Masonry.
- B. Section 06 16 00 - Sheathing
- C. Section 07 21 00 - Thermal Insulation
- D. Section 07 92 00 - Joint Sealants

**1.3 DEFINITIONS**

- A. Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.
- B. Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Note: For the purposes of this specification, vapor impermeable air barriers are classified as vapor retarders.
- C. Vapor Retarder: Air tight barrier made of material that is relatively water vapor impermeable, to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Water Vapor Permeance: For purposes of conversion,  $57.2 \text{ ng}/(\text{Pa s q m}) = 1 \text{ perm}$ .
- D. Water-Resistive Barrier: Water-shedding barrier made of material that is moisture resistant, to the degree specified, intended to be installed to shed water without sealed seams.

**1.4 REFERENCE STANDARDS**

- A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
- B. ASTM D570 - Standard Test Method for Water Absorption of Plastics.
- C. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
- D. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
- E. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
- F. ASTM E96 (Method B) - Standard Test Methods for Water Vapor Transmission of Materials.
- G. ASTM E154 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
- H. ASTM E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- I. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.
- J. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
- K. ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers; 2016.
- L. ICC-ES AC148 - Acceptance Criteria for Flexible Flashing Materials; 2017.
- M. ICC-ES AC212 - Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers over Exterior Sheathing; 2015.

**1.5 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide data on material characteristics.
- C. Manufacturer's Installation Instructions: Indicate preparation.

- D. Warranty Documentation for Installation of Building Rainscreen Assembly: Submit installer warranty and ensure that forms have been completed in Owner's name and registered with installer.

## 1.6 QUALITY ASSURANCE

- A. Air-barrier installer shall be currently accredited under the ABAA and ensure applicators are certified in accordance with the ABAA Quality Assurance Program.
- B. Use an experienced installer and adequate number of skilled personnel who are thoroughly trained and experienced in the application of the air barrier.
- C. Air-barrier Installer performing Work shall be approved by air barrier membrane manufacturer.
- B. Obtain air/vapor barrier materials from a single manufacturer regularly engaged in manufacturing the product.
- C. Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOCs).

## 1.7 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

## **PART 2 PRODUCTS**

### 2.1 WATER-RESISTIVE BARRIER MATERIALS (NEITHER AIR BARRIER OR VAPOR RETARDER)

- A. Rolled, Self-Adhering Air/Vapor Barrier Membrane: Polymeric air/vapor barrier membrane protected by release paper on cross-laminated polyethylene carrier film with exposed polymeric membrane strips on both sides protected by pull-off release strips.
  - 1. Performance Based Specification: Air/Vapor barrier membrane shall have the following characteristics:
    - a. Air Leakage, ASTM E2357:  $\leq 0.04$  cfm / ft.2 @ 75 Pa (1.57 lb./ft.2).
    - b. Air Permeability, ASTM E2178:  $\leq 0.004$  cfm / ft.2 @ 75 Pa (1.57 lb./ft.2).
    - c. Water Vapor Permeance, ASTM E96 (Method B):  $\leq 0.035$  perms.
    - d. Elongation, ASTM D412: 400 %.
    - e. Tensile Strength, ASTM D412: 4000 psi (27.6 MPa).
    - f. Lap Peel Strength @ 39o F (3.9o C), ASTM D903, 180 Bend: 10 lbf/in.(1.75
- B. Products:
  - 1. AIR-SHIELD by W. R. Meadows: [www.wrmeadows.com](http://www.wrmeadows.com).
  - 2. Perm-A-Barrier® NPS, by W.R. Grace & Co. (GCP Applied Technologies): [www.gcpat.com/construction/en-us/air-barriers](http://www.gcpat.com/construction/en-us/air-barriers).
  - 3. Substitutions: Refer to Section 01 00 00 – General Requirements.

### 2.2 ACCESSORIES

- A. Sealants, Tapes, and Accessories for Sealing Weather Barrier and Sealing Weather Barrier to Adjacent Substrates: As specified or as recommended by weather barrier manufacturer.
- B. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.

## **PART 3 EXECUTION**

### 3.1 EXAMINATION

- A. Verify that surfaces and conditions are ready to accept the work of this section.

### 3.2 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- B. Clean and prime substrate surfaces to receive adhesives in accordance with manufacturer's instructions.



### **3.3 INSTALLATION**

- A. Install materials in accordance with manufacturer's instructions.
- B. Water-Resistive Barriers: Install continuous barrier over surfaces indicated, with sheets lapped to shed water but with seams not sealed.
- C. Self-Adhered Sheets:
  - 1. Prepare substrate in manner recommended by sheet manufacturer; fill and tape joints in substrate and between dissimilar materials.
  - 2. Lap sheets shingle-fashion to shed water and seal laps air tight.
  - 3. Once sheets are in place, press firmly into substrate with resilient hand roller; ensure that laps are firmly adhered with no gaps or fishmouths.
  - 4. Use same material, or other material approved by sheet manufacturer for the purpose, to seal to adjacent construction and as flashing.
  - 5. At wide joints, provide extra flexible membrane allowing joint movement.
- D. Openings and Penetrations in Exterior Weather Barriers:
  - 1. Install flashing over sills, covering entire sill frame member, extending at least 5 inches (125 mm) onto weather barrier and at least 6 inches (150 mm) up jambs; mechanically fasten stretched edges.
  - 2. At openings to be filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches (100 mm) wide; do not seal sill flange.
  - 3. At openings to be filled with non-flanged frames, seal weather barrier to each side of opening framing, using flashing at least 9 inches (230 mm) wide, covering entire depth of framing.
  - 4. At head of openings, install flashing under weather barrier extending at least 2 inches (50 mm) beyond face of jambs; seal weather barrier to flashing.
  - 5. At interior face of openings, seal gap between window/door frame and rough framing, using joint sealant over backer rod.
  - 6. Service and Other Penetrations: Form flashing around penetrating item and seal to weather barrier surface.

### **3.4 FIELD QUALITY CONTROL**

- A. Do not cover installed weather barriers until required inspections have been completed.

### **3.5 PROTECTION**

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.
- B. Do not leave paper- or felt-based barriers exposed to weather for longer than one week.

**END OF SECTION**

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**SECTION 07 31 13**  
**ASPHALT SHINGLES**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Asphalt shingle roofing.
- B. Flexible sheet membranes for eave protection, underlayment, and valley protection.
- C. Associated metal flashings and accessories.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 16 00 - Sheathing.
- B. Section 07 71 23 - Manufactured Gutters and Downspouts.
- D. Section 07 92 00 – Joint Sealants.
- C. Section 08 62 23 – Tubular Skylights.

**1.3 REFERENCE STANDARDS**

- A. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2019.
- B. ASTM D3462/D3462M - Standard Specification for Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules; 2019.
- C. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2020a.
- D. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples; 2018a.
- E. NRCA (RM) - The NRCA Roofing Manual; 2019.
- F. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide data indicating material characteristics.
- C. Shop Drawings: For metal flashings, indicate specially configured metal flashings.
- D. Samples: Submit two samples of each shingle color indicating color range and finish texture/pattern; for color selection.
- E. Manufacturer's Installation Instructions: Indicate installation criteria and procedures.
- F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- G. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

**1.5 WARRANTY**

- A. See Section 01 00 00 – General Requirements, for additional warranty requirements.

**PART 2 PRODUCTS**

**2.1 ASPHALT SHINGLES**

- A. Basis-of-Design:
  - 1. Timberline Natural Shadow Lifetime Shingles, manufactured by GAF: [www.gaf.com](http://www.gaf.com) .
    - a. Color: Weathered Wood.
    - b. Self-sealing, granule surfaced, asphalt shingle with a strong fiberglass reinforced Micro Weave core and StainGuard protection, which prevents pronounced discoloration from blue-green algae through formulation/unique blends of granules.

- c. Architectural laminate styling provides a wood shake appearance with 5 5/8in. exposure. Features the classic Natural Shadow effect.
  - d. UL 790 Class A rated with UL 997 Wind Resistance Label; ASTM D 7158, Class H; ASTM D 3161, Type 1; ASTM D 3018, Type 1; ASTM D 3462; AC438 compliant; CSA 123.5-98.
2. Substitutions: See Section 01 00 00 - General Requirements.

## 2.2 SHEET MATERIALS

- A. Underlayment: Cold-applied, self-adhering membrane composed of a high density, cross laminated polyethylene film coated on one side with a layer of rubberized asphalt adhesive. An embossed, slip resistant surface is provided on the polyethylene. Membrane shall conform to the physical properties as listed below:
  - 1. Color: Gray-black.
  - 2. Thickness, membrane: 25 mil (0.64 mm), ASTM D3767 method A.
  - 3. Tensile strength, membrane: 250 psi (1720 kN/m<sup>2</sup>), ASTM D412 (Die C modified)
  - 4. Elongation, membrane: 250%, ASTM D412 (Die C modified)
  - 5. Adhesion to plywood: 3.0 lbs/in. width (525 N/m), ASTM D903
  - 6. Permeance (max): 0.05 Perms (2.9 ng/m<sup>2</sup>s Pa), ASTM E96
  - 7. Material weight installed (max): 0.14 lb/ft<sup>2</sup> (0.7 kg/m<sup>2</sup>), ASTM D461
  - 8. Manufacturers:
    - a. Grace Select, manufactured by GCP Advanced Technologies: [www.gcpat.com](http://www.gcpat.com) .
    - b. Substitutions: See Section 01 00 00 - General Requirements.

## 2.3 ACCESSORIES

- A. Roofing Nails: Standard round wire shingle type, galvanized steel, stainless steel, aluminum roofing nails, or copper roofing nails, minimum 3/8 inch (9.5 mm) head diameter, 12 gauge, 0.109 inch (2.77 mm) nail shank diameter, 1-1/2 inch (38 mm) long and complying with ASTM F1667.
- B. Staples: Standard wire shingle type, of hot dipped zinc coated steel, 16 wire gauge, 0.0508 inch (1.29 mm) diameter, 15/16 inch (23.8 mm) crown width, of sufficient length to penetrate through roof sheathing or 3/4 inch (19 mm) into roof sheathing or decking.
- C. Plastic Ridge Vents: Extruded plastic with vent openings that do not permit direct water or weather entry; flanged to receive shingles.

## 2.4 METAL FLASHINGS

- A. Metal Flashings: Provide sheet metal eave edge, gable edge, ridge, ridge vents, open valley flashing, chimney flashing, dormer flashing, and other flashing indicated.
  - 1. Form flashings to profiles indicated on drawings.
  - 2. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.
  - 3. Hem exposed edges of flashings minimum 1/4 inch (6 mm) on underside.
- B. Steel Sheet Metal: Prefinished and galvanized steel sheet, 26 gauge, 0.0179 inch (0.45 mm) minimum thickness, G90/Z275 hot-dipped galvanized; PVC coated, color matching Pac-Clad Matte Black.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify existing conditions prior to beginning work.
- B. Verify that roof deck is of sufficient thickness to accept fasteners.
- C. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.
- D. Verify deck surfaces are dry, free of ridges, warps, or voids.

### 3.2 PREPARATION

- A. Seal roof deck joints wider than 1/16 inch (1.5 mm) as recommended by shingle manufacturer.
- B. At areas where eave protection membrane is to be adhered to substrate, fill knot holes and surface cracks with latex filler.

- C. Broom clean deck surfaces before installing underlayment or eave protection.
- D. Install eave edge flashings tight with fascia boards, weather lap joints 2 inches (50 mm) and seal with plastic cement, and secure flange with nails spaced per manufacturer's instructions and NRCA (RM) applicable requirements.

### **3.3 INSTALLATION - UNDERLAYMENT**

- A. Install underlayment per manufacturer's instructions.
- B. Weather lap and seal watertight with plastic cement any items projecting through or mounted on roof.

### **3.4 INSTALLATION - METAL FLASHING AND ACCESSORIES**

- A. Install flashings in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Items Projecting Through or Mounted on Roofing: Flash and seal weather tight with plastic cement.

### **3.5 INSTALLATION - SHINGLES**

- A. Install shingles in accordance with manufacturer's instructions manufacturer's instructions and NRCA (RM) applicable requirements.
  - 1. Fasten individual shingles using two nails per shingle, or as required by manufacturer and local building code, whichever is greater.
  - 2. Fasten strip shingles using four nails per strip, or as required by manufacturer and local building code, whichever is greater.
- B. Place shingles in straight coursing pattern with 5 inch (125 mm) weather exposure to produce double thickness over full roof area, and provide double course of shingles at eaves.
- C. Project first course of shingles 3/4 inch (19 mm) beyond fascia boards.
- D. Extend shingles 1/2 inch (13 mm) beyond face of gable edge fascia boards.
- E. Complete installation to provide weather tight service.

**END OF SECTION**

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**SECTION 07 42 13**  
**METAL WALL PANELS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Manufactured metal panels for exterior wall panels, interior liner panels, soffit panels, and subgirt framing assembly, with accessory components.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Water-resistive barrier under wall panels.
- B. Section 06 16 00 - Sheathing.
- C. Section 07 21 00 - Thermal Insulation.
- D. Section 07 25 00 - Weather Barriers: Weather barrier under wall panels.
- E. Section 07 92 00 - Joint Sealants: Sealing joints between metal wall panel system and adjacent construction.

**1.3 REFERENCE STANDARDS**

- A. AAMA 2606-05 Voluntary Specification, Performance requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- B. AAMA 2604 - Voluntary Specification, Performance requirements and Test Procedures for High Performing Organic Coatings on Aluminum Extrusions and Panels.
- C. AAMA 2603 - Voluntary Specification, Performance requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.
- E. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2010 (Reapproved 2015).
- F. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data - Wall System: Manufacturer's data sheets on each product to be used, including:
  - 1. Physical characteristics of components shown on shop drawings.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation instructions and recommendations.
- C. Shop Drawings: Indicate dimensions, layout, joints, construction details, support clips, and methods of anchorage.
- D. Samples: Submit two samples of wall panel and soffit panel, 12 inches by 12 inches (305 mm by 305 mm) in size illustrating finish color, sheen, and texture.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- B. Store prefinished material off the ground and protected from weather; prevent twisting, bending, or abrasion; provide ventilation; slope metal sheets to ensure proper drainage.
- C. Prevent contact with materials that may cause discoloration or staining of products.

**PART 2 PRODUCTS**

**2.1 VERTICALLY INSTALLED EXTERIOR METAL WALL PANELS**

- A. Basis-of-Design: Precision Series Box Rib Concealed Fastener architectural wall panels manufactured by Petersen Aluminum Corp: [www.pac-clad.com](http://www.pac-clad.com).

1. Material: Prefinished 24 gauge steel.
2. Profile: Vertically installed box rib style profiles as indicated on Drawing Sheet AG003.
3. Side Seams: Double-interlocked, tight-fitting, sealed with continuous gaskets.
4. Panel Width: 12" Nominal.
5. Panel Depth: 1 3/8".
6. Colors: PAC-CLAD standard colors as indicated on Drawing Sheet AG003.
7. Mounting: As recommended by manufacturer and as indicated on the drawings.
8. Internal and External Corners: Micro-seam corners, same material, thickness, and finish as exterior sheets; profile to suit system; shop cut and factory mitered to required angles.
9. Expansion Joints: Same material, thickness and finish as exterior sheets; 24 gage; manufacturer's standard brake formed type, of profile to suit system.
10. Trim: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

## 2.2 HORIZONTALY INSTALLED EXTERIOR METAL WALL PANELS

- A. Basis-of-Design: Longboard Aluminum V-Groove Concealed Fastener Extruded Aluminum Plank Siding manufactured by Mayne Inc.: [www.longboardproducts.com](http://www.longboardproducts.com).
  1. Material: Extruded aluminum 6063 T5.
  2. Thickness: 1.52 mm base metal thickness.
  3. Profile: 6 inch (152.4mm) V-Groove plank
  4. Mounting: As recommended by manufacturer and as indicated on the drawings.
  5. Finish coating: Manufacturer's Wood-look powder coated finish.
  6. Colors: As indicated on Drawing Sheet AG003.
  7. Accessories: Exposed trim: inside corners, outside corners, wide starter strip, j-track, Flat-cap and base, U-cap and base, Finishing-cap and base, two-piece corner, perforated 2.5 vent strip, 2.5 non-perforated strip in same material and finishes as siding.

## 2.3 SOFFIT PANELS

- A. Basis-of-Design: PAC-750 Full Vented Soffit Panels manufactured by Petersen Aluminum Corp: [www.pac-clad.com](http://www.pac-clad.com).
  1. Material: Prefinished 24 gauge steel.
  2. Profile: Vertically installed box rib style profiles as indicated on Drawing Sheet AG003.
  3. Side Seams: Double-interlocked, tight-fitting, sealed with continuous gaskets.
  4. Panel Width: 12" Nominal.
  5. Panel Depth: 1/2".
  6. Colors: PAC-CLAD Slate Gray (above Slate Gray wall panels) and PAC-CLAD Granite (above Granite wall panels).
  7. Accessories: "J" channel trim in matching colors.

## 2.4 ACCESSORIES

- A. Cladding Support Clips: galvanized steel clips for support of cladding z-girts, angles, channels and other framing.
  1. Galvanized Steel Sheet: ASTM A653/A653M, with G90/Z275 galvanized coating.
- B. Subgirts: 1/2" deep, horizontally installed galvanized metal hat channels as recommended by manufacturer.
- B. Fasteners: Manufacturer's standard type to suit application; steel, hot dip galvanized.
- C. Field Touch-up Paint: As recommended by panel manufacturer.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that building framing members are ready to receive panels.
- B. Verify that weather barrier has been installed over substrate completely and correctly.

### 3.2 INSTALLATION

- A. Install panels on walls and soffits in single lengths accordance with manufacturer's instructions.
- B. Attach components in manner not restricting thermal movement.



### **3.3 TOLERANCES**

- A. Maximum Offset From True Alignment Between Adjacent Members Butting or In Line: 1/16 inch (1.6 mm).
- B. Maximum Variation from Plane or Location Indicated on Drawings: 1/4 inch (6.4 mm).

### **3.4 CLEANING**

- A. Remove site cuttings from finish surfaces.
- B. Remove protective material from wall panel surfaces.
- C. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

**END OF SECTION**

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**SECTION 07 53 23**  
**EPDM ROOFING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Fully adhered roof system with ethylene propylene diene monomer (EPDM) roofing membrane.
- B. Insulation, flat and tapered.
- C. Vapor retarder.
- D. Flashings.
- E. Roofing cant strips, stack boots, roofing expansion joints, and walkway pads.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 10 00 – Rough Carpentry.
- B. Section 06 16 00 – Sheathing.

**1.3 REFERENCE STANDARDS**

- A. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2019.
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016.
- C. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane; 2015.
- D. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- E. NRCA (RM) - The NRCA Roofing Manual; 2019.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's written information listed below.
  - 1. Product data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, and fasteners.
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements.
- C. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.
- D. Specimen Warranty: For approval.
- E. Manufacturer's Qualification Statement.
- F. Installer's Qualification Statement.

**1.5 FIELD CONDITIONS**

- A. Do not apply roofing membrane during unsuitable weather. Refer to manufacturer's written instructions.

**PART 2 PRODUCTS**

**2.1 ROOFING APPLICATIONS**

- A. EPDM Membrane Roofing: One ply membrane, fully adhered, over insulation.
- B. Roofing Assembly Performance Requirements and Design Criteria:
  - 1. Insulation Thermal Resistance (R-Value): Provide R-Value over entire roof deck in accordance with local building code requirements.
  - 2. Drainage: No standing water within 48 hours after precipitation.

**2.2 ROOFING MEMBRANE AND ASSOCIATED MATERIALS**

- A. Single Source Responsibility: Provide and install products from single source.

- B. Membrane:
  - 1. Material: Ethylene propylene diene monomer (EPDM); ASTM D4637/D4637M, Type I (non-reinforced).
  - 2. Thickness: 45 mils (0.045 inch) (1.1 mm), minimum.
  - 3. Sheet Width: Factory fabricated into largest sheets possible.
  - 4. Color: Black.
- C. Seaming Materials: As recommended by membrane manufacturer.
- D. Vapor Retarder: Material approved by roof manufacturer complying with requirements of fire rating classification; compatible with roofing and insulation materials.
- E. Flexible Flashing Material: Same material as membrane.
- F. Base Flashing: Provide waterproof, fully adhered base flashing system at all penetrations, plane transitions, and terminations.

### **2.3 INSULATION**

- A. Polyisocyanurate (ISO) Board Insulation: ASTM C1289, Type II, Class 1 - Faced with glass fiber reinforced cellulosic felt facers on both major surfaces of the core foam; Grade 1.
  - 1. Compressive Strength: 16 psi (110 kPa).

### **2.4 ACCESSORIES**

- A. Prefabricated Flashing Accessories:
  - 1. Corners and Seams: Same material as membrane, in manufacturer's standard thicknesses.
  - 2. Penetrations: Same material as membrane, with manufacturer's standard cut-outs, rigid inserts, clamping rings, and flanges.
- B. Membrane Adhesive: As recommended by membrane manufacturer.
- C. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.
- D. Sealants: As recommended by membrane manufacturer.
- E. Cleaner: Manufacturer's standard, clear, solvent-based cleaner.
- F. Edgings and Terminations: Manufacturer's standard prefinished metal gravel stop edge and termination, profiles as indicated on the Drawings accessories.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of snow or ice.
- E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

### **3.2 PREPARATION, GENERAL**

- A. Clean substrate thoroughly prior to roof application.

### **3.3 WOOD DECK PREPARATION**

- A. Verify flatness and tightness of joints of wood decking. Verify that all wood decking edges are fully supported. Fill knot holes with latex filler or completely cover with securely nailed sheet metal.

### **3.4 INSTALLATION - GENERAL**

- A. Perform work in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.

### **3.5 INSULATION APPLICATION**

- A. Apply vapor retarder to deck surface with adhesive in accordance with manufacturer's instructions.

1. Extend vapor retarder under cant strips and blocking to deck edge.
  2. Install flexible flashing from vapor retarder to air seal material of wall construction, lap and seal to provide continuity of the air barrier plane.
- B. Ensure vapor retarder is clean and dry, continuous, and ready for application of insulation.
  - C. Lay subsequent layers of insulation with joints staggered minimum 6 inch (152 mm) from joints of preceding layer.
  - D. Lay boards with edges in moderate contact without forcing, and gap between boards no greater than 1/4 inch (6 mm). Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
  - E. Do not apply more insulation than can be completely waterproofed in the same day.

### **3.6 MEMBRANE APPLICATION**

- A. Fully Adhered Application: Apply adhesive at manufacturer's recommended rate. Fully embed membrane in adhesive except in areas directly over or within 3 inches (75 mm) of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.
- B. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches (75 mm). Seal permanently waterproof.
- C. At intersections with vertical surfaces:
  1. Extend membrane over cant strips and up a minimum of 4 inches (100 mm) onto vertical surfaces.
  2. Fully adhere flexible flashing over membrane and up to nailing strips.
- D. At gravel stops, extend membrane under gravel stop and to the outside face of the wall.

### **3.7 PROTECTION**

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

**END OF SECTION**

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**SECTION 07 71 00**  
**ROOF SPECIALTIES**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. custom fabricated and/or manufactured roof specialties, including copings, fascias, and gravel stops.

**1.2 RELATED REQUIREMENTS**

- A. Section 07 3113 – Asphalt Shingles.
- B. Section 07 42 13 – Metal Wall Panels.
- C. Section 07 53 23 – EPDM Thermoset Single Ply Roofing.
- D. Section 07 71 23 - Manufactured Gutters and Downspouts.

**1.3 REFERENCE STANDARDS**

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- B. ANSI/SPRI/FM 4435/ES-1 - Test Standard for Edge Systems Used with Low Slope Roofing Systems; 2017.
- C. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- D. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2018).
- E. NRCA (RM) - The NRCA Roofing Manual; 2019.
- F. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.
- C. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.

**PART 2 PRODUCTS**

**2.1 COMPONENTS**

- A. Roof Edge Flashings: Fabricated to sizes required; corners mitered; concealed fasteners.
  - 1. Configuration: Fascia, cant, and edge securement for roof membrane.
  - 2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test methods RE-1 and RE-2 to positive and negative design wind pressure as defined by applicable local building code.
  - 3. Exposed Face Height: As indicated on drawings.
  - 4. Material: Extruded aluminum, 0.08 inch (2.0 mm) thick, minimum or formed steel sheet, galvanized, 24 gauge, 0.024 inch (0.6 mm) thick, minimum.
  - 5. Finish: Manufacturer's low gloss/low sheen, high performance 70% polyvinylidene fluoride factory finish.
  - 6. Color: To be selected by Architect from manufacturer's standard range.
- B. Copings: Fabricated to sizes required; corners mitered; concealed fasteners.
  - 1. Configuration: Concealed continuous hold down cleat at both legs; internal splice piece at joints of same material, thickness, and finish as cap; concealed stainless steel fasteners.
  - 2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test method RE-3 to positive and negative design wind pressure as defined by applicable local building code.
  - 3. Wall Width: As indicated on drawings.
  - 4. Outside Face Height: As indicated on drawings.
  - 5. Inside Face Height: As indicated on drawings.
  - 6. Material: Formed aluminum sheet, 0.040 inch (1.01 mm) thick, minimum, or formed steel sheet, galvanized, 24 gauge, 0.024 inch (0.6 mm) thick, minimum.

7. Finish: Manufacturer's low gloss/low sheen, high performance 70% polyvinylidene fluoride factory finish.
  8. Color: To be selected by Architect from manufacturer's standard range.
- C. Pipe and Penetration Flashing: Base of rounded aluminum, compatible with sheet metal roof systems, and capable of accommodating pipes sized between 3/8 inch (9.5 mm) and 12 inch (305 mm).
    1. Caps: EPDM.
    2. Color: To be selected by Architect from manufacturer's standard range.
  - D. Roof Penetration Sealing Systems: Premanufactured components and accessories as required to preserve integrity of roofing system and maintain roof warranty; suitable for conduits and roofing system to be installed; designed to accommodate existing penetrations where applicable.
  - E. Pipe Penetration Wall Seal: Seal for HVAC piping wall penetrations with wall mounted rigid plastic outlet cover and elastomeric wall seal gasket.
    1. Outlet Cover Color: To be selected by Architect from manufacturer's standard range.

## **2.2 ACCESSORIES**

- A. Sealant for Joints in Linear Components: As recommended by component manufacturer.
- B. Adhesive for Anchoring to Roof Membrane: Compatible with roof membrane and approved by roof membrane manufacturer.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.

### **3.2 INSTALLATION**

- A. Install components in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Seal joints within components when required by component manufacturer.
- C. Anchor components securely.
- D. Coordinate installation of components of this section with installation of roofing membrane and base flashings.

**END OF SECTION**



**SECTION 07 71 23**  
**MANUFACTURED GUTTERS AND DOWNSPOUTS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Pre-finished aluminum gutters and downspouts.
- B. Precast concrete splash pads.

**1.2 RELATED REQUIREMENTS**

- A. Section 07 31 13 – Asphalt Shingles: Sloped roofing system.
- B. Section 07 46 16 - Aluminum Siding: Aluminum Fascia and Soffits.

**1.3 REFERENCE STANDARDS**

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.
- B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- C. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.
- D. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide data on prefabricated components.
- C. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.
- D. Samples: Submit two samples, 8 inch long illustrating component design, finish, color, and configuration.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.
- B. Prevent contact with materials that could cause discoloration, staining, or damage.

**PART 2 PRODUCTS**

**2.1 MATERIALS**

- A. Pre-Finished Aluminum Sheet: ASTM B209 (ASTM B209M); 0.032 inch (0.8 mm) thick.
  - 1. Finish: Plain, shop pre-coated with modified silicone coating.
  - 2. Color: Match PAC-CLAD Matte Black.

**2.2 COMPONENTS**

- A. Gutters: CDA rectangular style profile.
- B. Downspouts: CDA Rectangular profile.
- C. Anchors and Supports: Profiled to suit gutters and downspouts.
  - 1. Anchoring Devices: In accordance with CDA requirements.
  - 2. Gutter Supports: Brackets.
  - 3. Downspout Supports: Brackets.
- D. Fasteners: Galvanized steel, with soft neoprene washers.

**2.3 ACCESSORIES**

- A. Splash Pads: Precast concrete type, size and profiles indicated; minimum 3000 psi (21 MPa) at 28 days, with minimum 5 percent air entrainment.

## **2.4 FABRICATION**

- A. Form gutters and downspouts of profiles and size indicated.
- B. Fabricate with required connection pieces.
- C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.
- D. Hem exposed edges of metal.
- E. Fabricate gutter and downspout accessories; seal watertight.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that surfaces are ready to receive work.

### **3.2 INSTALLATION**

- A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.
- B. Slope gutters as required.
- C. Set splash pads under downspouts.

**END OF SECTION**

**SECTION 07 84 00**  
**FIRESTOPPING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Firestopping of joints and penetrations in fire resistance rated and smoke resistant assemblies, whether indicated on drawings or not, and other openings indicated.

**1.2 RELATED REQUIREMENTS**

- A. Section 07 05 53 - Fire and Smoke Assembly Identification.
- B. Section 09 21 16 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

**1.3 REFERENCE STANDARDS**

- A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a (Reapproved 2017).
- B. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems; 2015 (Reapproved 2019).
- C. ITS (DIR) - Directory of Listed Products; current edition.
- D. FM 4991 - Approval Standard for Firestop Contractors; 2013.
- E. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.
- F. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.
- G. UL (FRD) - Fire Resistance Directory; Current Edition.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
- C. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Installer Qualification: Submit qualification statements for installing mechanics.

**1.5 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and:
  - 1. Trained by manufacturer.

**1.6 FIELD CONDITIONS**

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

**PART 2 PRODUCTS**

**2.1 MATERIALS**

- A. Firestopping Materials: Any materials meeting requirements.
- B. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.
- C. Fire Ratings: Refer to drawings for required systems and ratings.

## **2.2 FIRESTOPPING SYSTEMS**

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Verify openings are ready to receive the work of this section.

#### **3.2 PREPARATION**

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.
- B. Remove incompatible materials that could adversely affect bond.

#### **3.3 INSTALLATION**

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
- B. Do not cover installed firestopping until inspected by authorities having jurisdiction.
- C. Install labeling required by code.

#### **3.4 CLEANING**

- A. Clean adjacent surfaces of firestopping materials.

**END OF SECTION**

**SECTION 07 92 00**  
**JOINT SEALANTS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Nonsag gunnable joint sealants.
- B. Joint backings and accessories.
- C. Joint backings and accessories.

**1.2 RELATED REQUIREMENTS**

- A. Section 07 25 00 - Weather Barriers: Sealants required in conjunction with air barriers and vapor retarders.
- B. Section 07 84 00 - Firestopping: Firestopping sealants.
- C. Section 09 30 00 - Tiling: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.

**1.3 REFERENCE STANDARDS**

- A. ASTM C834 - Standard Specification for Latex Sealants; 2017.
- B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2018.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- E. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2018.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
  - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
  - 2. List of backing materials approved for use with the specific product.
  - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
  - 4. Substrates the product should not be used on.
  - 5. Certification by manufacturer indicating that product complies with specification requirements.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

**PART 2 PRODUCTS**

**2.1 JOINT SEALANT APPLICATIONS**

- A. Scope:
  - 1. Exterior Joints: Seal open joints, whether or not the joint is indicated on the drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
    - a. Wall expansion and control joints.
    - b. Joints between door, window, and other frames and adjacent construction.
    - c. Joints between different exposed materials.
    - d. Openings below ledge angles in masonry.
    - e. Other joints indicated below.
  - 2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
    - a. Joints between door, window, and other frames and adjacent construction.

- b. Joints in concrete floors.
- c. Expansion joints in finish flooring.
- d. Other joints indicated below.
- 3. Do not seal the following types of joints.
  - a. Intentional weepholes in masonry.
  - b. Joints within rainscreen system.
  - c. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
  - d. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
  - e. Joints where installation of sealant is specified in another section.
  - f. Joints between suspended panel ceilings/grid and walls.
- B. Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.
  - 1. Lap Joints in Sheet Metal Fabrications: Butyl rubber, non-curing; includes the following:
    - a. Thresholds.
    - b. Sheet metal flashings and trim joints, including scuppers and gutters.
  - 2. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant.
- C. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
  - 1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
  - 2. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
  - 3. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.
  - 4. Other Floor Joints: Self-leveling polyurethane "traffic-grade" sealant.
- D. Interior Wet Areas: Bathrooms, restrooms, kitchens, food service areas, and food processing areas; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.
- E. Sound-Rated Assemblies: Walls and ceilings identified as "STC-rated", "sound-rated", or "acoustical".

## 2.2 NONSAG JOINT SEALANTS

- A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
  - 1. Movement Capability: Plus and minus 50 percent, minimum.
  - 2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
  - 3. Color: To be selected by Architect from manufacturer's standard range.
  - 4. Products:
    - a. Dow Corning Corporation; 795 Silicone Building Sealant: [www.dowcorning.com/construction/sle](http://www.dowcorning.com/construction/sle).
    - b. Sika Corporation; Sikasil WS-290/WS-295: [www.usa-sika.com](http://www.usa-sika.com).
    - c. Tremco, Spectrem 1/Spectrem 2/Spectrem 4-TS: [www.tremcosealants.com](http://www.tremcosealants.com).
  - 5. Applications:
    - a. Exterior joints unless otherwise indicated, including, but not limited to, the following:
      - 1) Exterior vertical and horizontal nontraffic joints in cast-in-place concrete.
      - 2) Exterior vertical and horizontal nontraffic joints between plant-precast architectural concrete units.
      - 3) Exterior vertical control and expansion joints in unit masonry.
      - 4) Exterior horizontal pressure-relieving joints in unit masonry.
      - 5) Exterior joints between flashing materials and unit masonry.
      - 6) Exterior butt joints between metal panels.
      - 7) Exterior perimeter joints between different materials listed above.
- B. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
  - 1. Color: White.
  - 2. Products:
    - a. Dow Corning Corporation, 786 Mildew Resistant.
    - b. Pecora Corporation; 898NST Sanitary Silicone Sealant - Class 50: [www.pecora.com](http://www.pecora.com).
    - c. Sika Corporation; Sikasil GP: [www.usa-sika.com](http://www.usa-sika.com).
    - d. Tremco; Tremsil 200: [www.tremcosealants.com](http://www.tremcosealants.com).
  - 3. Applications:
    - a. Interior joints between plumbing fixtures and adjoining walls, floors, and counters.
    - b. Joints between counters and adjoining walls and floors at bathrooms, kitchens and other wet areas.

- C. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
  - 1. Color: Match adjacent finished surfaces.
  - 2. Manufacturers:
    - a. BASF; MasterSeal NP1/NP2.
    - b. Pecora Corporation; DynaTrol I-XL/DynaTrol II.
    - c. Sika Corporation; Sikaflex-1a/Sikaflex-2c: [www.usa-sika.com](http://www.usa-sika.com).
    - d. Tremco; Vulkem 116/Dymeric 240: [www.tremcosealants.com](http://www.tremcosealants.com)
  - 3. Applications:
    - a. Vertical joints on exposed surfaces of interior unit masonry and concrete walls and partitions.
    - b. Interior perimeter joints of exterior openings.
    - c. Joints between top of non-load bearing unit masonry walls and underside of cast-in-place concrete slabs and beams.
- D. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
  - 1. Color: To be selected by Architect from manufacturer's standard range.
  - 2. Products:
    - a. Pecora, AC-20 + Silicone: [www.pecora.com](http://www.pecora.com).
    - b. Sherwin-Williams Company; 950A Siliconized Acrylic Latex Caulk: [www.sherwin-williams.com](http://www.sherwin-williams.com).
    - c. Tremco, Tremflex 834: [www.tremcosealants.com](http://www.tremcosealants.com).
  - 3. Applications:
    - a. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.
- E. Non-Curing Butyl Sealant: Solvent-based; ASTM C1311; single component, non-sag, non-skinning, non-hardening, non-bleeding; vapor-impermeable; intended for fully concealed applications.
  - 1. Applications:
    - a. Thresholds.

### **2.3 ACCESSORIES**

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- C. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.

### **3.2 PREPARATION**

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

### **3.3 INSTALLATION**

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Perform acoustical sealant application work in accordance with ASTM C919.

- D. Install bond breaker backing tape where backer rod cannot be used.
- E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

**END OF SECTION**



**SECTION 08 11 13**  
**HOLLOW METAL DOORS AND FRAMES**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Non-fire-rated hollow metal doors and frames.
- B. Hollow metal frames for wood doors.
- C. Fire-rated hollow metal doors and frames.
- D. Bullet-resistant hollow metal doors and frames.
- E. Hollow metal sidelite and/or borrowed lite frames.
- F. Door and Sidelite glazing.

**1.2 RELATED REQUIREMENTS**

- A. Section 08 14 16 - Flush Wood Doors.
- B. Section 08 71 00 - Door Hardware.
- C. Section 09 91 13 - Exterior Painting: Field painting.
- D. Section 09 91 23 - Interior Painting: Field painting.

**1.3 REFERENCE STANDARDS**

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames; 2007 (Reaffirmed 2011).
- C. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2011.
- D. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2003 (R2009).
- E. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2017.
- F. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2011.
- G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.
- H. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2018.
- I. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- J. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2016.
- K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- L. ITS (DIR) - Directory of Listed Products; current edition.
- M. NAAMM HMMA 805 - Recommended Selection and Usage Guide for Hollow Metal Doors and Frames; 2012.
- N. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.
- O. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.
- P. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2007.
- Q. NAAMM HMMA 850 - Fire-Protection and Smoke Control Rated Hollow Metal Door and Frame Products; 2014.
- R. NAAMM HMMA 860 - Guide Specifications for Hollow Metal Doors and Frames; 2018.
- S. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.

- T. NAAMM HMMA 862 - Guide Specifications for Commercial Security Hollow Metal Doors and Frames; 2013.
- U. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2019.
- V. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2017.
- W. UL (DIR) - Online Certifications Directory; Current Edition.
- X. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- Y. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition, Including All Revisions.

#### **1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.
- C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.
- D. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.
- E. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

#### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

### **PART 2 PRODUCTS**

#### **2.1 PERFORMANCE REQUIREMENTS**

- A. Requirements for Hollow Metal Doors and Frames:
  - 1. Steel Sheet: Comply with one or more of the following requirements; galvanized steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
  - 2. Accessibility: Comply with ICC A117.1 and ADA Standards.
  - 3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
  - 4. Door Edge Profile: Manufacturer's standard for application indicated.
  - 5. Typical Door Face Sheets: Flush.
  - 6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturer's standard.
  - 7. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
  - 8. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvanized) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
- B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

#### **2.2 HOLLOW METAL DOORS**

- A. Interior Doors, Non-Fire-Rated:
  - 1. Based on NAAMM HMMA Custom Guidelines:
    - a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
    - b. Performance Level 2 - Moderate Duty, in accordance with NAAMM HMMA 805.
    - c. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
    - d. Door Face Metal Thickness: 20 gauge, 0.032 inch (0.8 mm), minimum.

2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
  3. Door Thickness: 1-3/4 inches (44.5 mm), nominal.
  4. Door Face Sheets: Flush.
  5. Door Finish: Factory primed and field finished.
- B. Fire-Rated Doors:
1. Based on NAAMM HMMA Custom Guidelines: Comply with NAAMM HMMA 850 requirements for fire-rated doors.
    - a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
    - b. Performance Level 2 - Moderate Duty, in accordance with NAAMM HMMA 805.
    - c. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
    - d. Door Face Metal Thickness: 20 gauge, 0.032 inch (0.8 mm), minimum.
  2. Fire Rating: As indicated on Door Schedule, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").
  3. Provide units listed and labeled by UL (DIR) or ITS (DIR).
    - a. Attach fire rating label to each fire rated unit.
  4. Door Thickness: 1-3/4 inches (44.5 mm), nominal.
  5. Door Face Sheets: Flush.
  6. Door Finish: Factory primed and field finished.
- C. Bullet-Resistant Doors; Exterior:
1. Based on NAAMM HMMA Custom Guidelines:
  2. Ballistic Safety Requirements: The door and frame assembly will meet a Bullet Resistant level of protection that will comply with UL 752, Level 3, NIJ 0801-1 Bullet Resistant Standards, or ASTM F1233.
  3. Door Core Material: Manufacturers standard core material/construction in compliance with requirements.
  4. Door Thickness: As required to meet requirements indicated.
  5. Hinge Rail and Reinforcement: Non-beveled edge, reinforced with continuous steel channel, 12 gauge, 0.093 inch (2.3 mm) minimum metal thickness, welded at 5 inch (127 mm) on center maximum, and compatible with 4-1/2 inch (114 mm) full mortise template and continuous geared hinges.
  6. Door Finish: Factory primed and field finished.

### 2.3 HOLLOW METAL FRAMES

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. Frame Finish: Factory primed and field finished.
- C. Exterior Door Frames: Full profile/continuously welded type.
  1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
  2. Weatherstripping: Separate, see Section 08 71 00.
- D. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
- E. Door Frames, Fire-Rated: Full profile/continuously welded type.
  1. Fire Rating: Same as door, labeled.
- F. Bullet-Resistant Door Frames: Comply with UL 752, Level 3, with same level of bullet resistance as door; face welded construction, ground smooth, fully prepared and reinforced for hardware installation.
- G. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.
- H. Side Lite and/or Borrowed Lite Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings or as standard manufacturer's sizes.
- I. Frames Wider than 48 inches (1219 mm): Reinforce with steel channel fitted tightly into frame head, flush with top.

### 2.4 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

## 2.5 ACCESSORIES

- A. Door Window Frames: Door window frames with glazing securely fastened within door opening.
  - 1. Size: As indicated on drawings.
  - 2. Frame Material: 18 gauge, 0.0478 inch (1.21 mm), galvanized steel.
  - 3. Glazing: 1/4 inch (6.4 mm) thick, tempered glass, in compliance with requirements of authorities having jurisdiction.
- B. Door Window Glazing, Sidelite Glazing and/or Borrowed Lite Glazing, factory installed:
  - 1. Non-rated doors: 1/4 inch tempered safety glazing, factory installed.
  - 2. Fire Rated doors: 1/4" fire rated safety glazing meeting rating requirements for the door, factory installed.
- C. Bullet Resistive Door Glazing:
  - 1. Bullet resistant glass shall be provided and factory installed by the system fabricator. The security glass unit shall be an insulated, low E, glass clad polycarbonate consisting of a 1/4" heat strengthened outer layer – 1/2" insulating space – 1 1/4" glass clad polycarbonate. Low E coating shall be applied to the #2 surface of the outboard ply and shall be similar in color and performance to Viracon VE1-40.
  - 2. Glazing sealants, neoprene or silicone and setting blocks shall be provided by the supplier of the bullet resistant glazing.
- D. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.
- D. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.
- E. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

## **PART 3 EXECUTION**

### 3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in plane to ensure proper door alignment.

### 3.2 INSTALLATION

- A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
- B. Install fire rated units in accordance with NFPA 80.
- C. Install bullet resistive doors and frames per manufacturer's instructions and per UL 752.
- C. Coordinate frame anchor placement with wall construction.
- D. Install door hardware as specified in Section 08 71 00.
- E. Coordinate installation of electrical connections to electrical hardware items.

### 3.3 TOLERANCES

- A. Maximum Diagonal Distortion: 1/16 inch (1.6 mm) measured with straight edge, corner to corner.

### 3.4 ADJUSTING

- A. Adjust for smooth and balanced door movement.

### 3.5 SCHEDULE

- A. Refer to Door and Frame Schedule on the drawings.

**END OF SECTION**

**SECTION 08 14 16**  
**FLUSH WOOD DOORS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Flush wood doors.
- B. Fire-Rated flush wood doors.
- C. Bullet-resistant flush wood veneer door.
- D. Door glazing.

**1.2 RELATED REQUIREMENTS**

- A. Section 08 11 13 - Hollow Metal Doors and Frames.
- B. Section 08 71 00 - Door Hardware.

**1.3 REFERENCE STANDARDS**

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2017.
- C. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.
- D. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2014.
- E. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2010 (Reapproved 2018).
- F. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2018).
- G. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; 2017, with Errata (2019).
- H. BHMA A156.2 - American National Standard for Bored and Preassembled Locks & Latches; 2017.
- I. FM (AG) - FM Approval Guide; current edition.
- J. NAAMM HMMA 866 - Guide Specifications for Stainless Steel Hollow Metal Doors and Frames; 2012.
- K. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2019.
- L. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2017.
- M. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- N. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition, Including All Revisions.
- O. WDMA I.S. 1A - Interior Architectural Wood Flush Doors; 2013.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 – General Requirements, for submittal procedures.
- B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
- D. Samples: Submit two samples of door veneer, 8 by 8 inches in size illustrating wood grain, stain color, and sheen.
- E. Certificate: Submit labels and certificates required by quality assurance and quality control programs.
- F. Test Reports: Show compliance with specified requirements for the following:
  - 1. Bullet resistant doors and frames.
- G. Manufacturer's Installation Instructions: Indicate special installation instructions.

## **1.5 QUALITY ASSURANCE**

## **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Package, deliver and store doors in accordance with specified quality standard.
- B. Accept doors on site in manufacturer's packaging, and inspect for damage.
- C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

## **PART 2 PRODUCTS**

### **2.1 DOORS**

- A. Doors: See drawings for locations and additional requirements.
  - 1. Quality Standard: Custom Grade, Standard Duty performance, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
  - 2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.
- B. Interior Doors: 1-3/4 inches (44 mm) thick unless otherwise indicated; flush construction.
  - 1. Provide solid core doors at each location.
  - 2. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with UL 10C - Positive Pressure; Underwriters Laboratories Inc (UL) or Intertek/Warnock Hersey (WHI) labeled without any visible seals when door is open.
- C. Bullet Resistant Doors: UL 752, Level 3.
  - 1. Wood veneer facing with factory transparent finish as indicated on drawings.

### **2.2 DOOR AND PANEL CORES**

- A. Fire-Rated Doors: Mineral core type, with fire resistant composite core (FD), plies and faces as indicated above; with core blocking as required to provide adequate anchorage of hardware without through-bolting.
- B. Bullet-Resistant Composite: UL Listed Bullet Resistant Composite by ARMORTEX, of UL level equal to specified door and frame ballistic protection level listed above. Solid core construction with wood veneer faces, bullet-resistant composite core and solid wood stile and rail edges of same species as veneer.

### **2.3 DOOR FACINGS**

- A. Veneer Facing for Transparent Finish: Red oak, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face.
- B. Finish: Refer to Door Schedule on Drawing Sheet A811.

### **2.4 DOOR CONSTRUCTION**

- A. Fabricate doors in accordance with door quality standard specified.
- B. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- C. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
- D. Provide edge clearances in accordance with the quality standard specified.

### **2.5 FINISHES - WOOD VENEER DOORS**

- A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
- B. Factory finish doors in accordance with approved sample.

### **2.6 ACCESSORIES**

- A. Hollow Metal Door Frames: See Section 08 11 13.

- B. Glazed Openings:
  - 1. Heat-Strengthened and Fully Tempered Glass: ASTM C1048.
  - 2. Laminated Glass: Float glass laminated in accordance with ASTM C1172.
  - 3. Fire-Protection-Rated Glass: Safety Certification, 16 CFR 1201, Category II.
  - 4. Tint: Clear.
- C. Door Window Frames: Door window frames with glazing securely fastened within door opening.
  - 1. Size: 12 inches wide by 12 inches high (305 mm wide by 305 mm high).
  - 2. Frame Material: 18 gauge, 0.0478 inch (1.21 mm), galvanized steel.
  - 3. Metal Finish: Dark Bronze polyester powder coating.
- D. Glazing Stops: Wood, of same species as door facing, butted corners; prepared for countersink style tamper proof screws.
- E. Bullet Resistive Door Glazed Openings:
  - 1. Bullet resistant glass shall be provided and factory installed by the system fabricator. The security glass unit shall be an laminated polycarbonate meeting UL 752, Level 3 requirement.
- F. Door Hardware: See Section 08 71 00.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

#### **3.2 INSTALLATION**

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
- B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.
- C. Use machine tools to cut or drill for hardware.
- D. Coordinate installation of doors with installation of frames and hardware.
- E. Coordinate installation of glazing.

#### **3.3 ADJUSTING**

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust closers for full closure.

#### **3.4 SCHEDULE**

- A. Refer to Door and Frame Schedule on the drawings.

**END OF SECTION**

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**SECTION 08 31 00**  
**ACCESS DOORS AND PANELS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Wall and ceiling mounted access units.
- B. Attic Access Doors with Pull-Down Ladders..

**1.2 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry.
- B. Section 09 21 16 - Gypsum Board Assemblies.
- C. Section 09 91 23 - Interior Painting: Field paint finish.

**1.3 REFERENCE STANDARDS**

- A. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2018.
- B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- C. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
  - 1. Manufacturer's data sheets on each product to be used.
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements and recommendations.
  - 4. Typical installation methods.
- C. Shop Drawings:
  - 1. Indicate exact position of each access door and/or panel unit.
  - 2. Provide shop drawings for Attic Access door and ladder type.

**PART 2 PRODUCTS**

**2.1 WALL AND CEILING MOUNTED ACCESS UNITS**

- A. Wall and Ceiling Mounted Units: Factory fabricated door and frame, fully assembled units with corner joints welded, filled and ground flush; square and without rack or warp; coordinate requirements with type of installation assembly being used for each unit.
  - 1. Material: Steel.
  - 2. Style: Frame concealed by door panel.
  - 3. Door Style: Single thickness with rolled or turned in edges.
  - 4. Frames: 16 gauge, 0.0598 inch (1.52 mm), minimum thickness.
  - 5. Single Steel Sheet Door Panels: 1/16 inch (1.6 mm), minimum thickness.
  - 6. Steel Finish: Primed.
  - 7. Hardware:
    - a. Hinges for Non-Fire-Rated Units: Concealed, constant force closure spring type.
    - b. Handle: No handle.

**2.2 ATTIC ACCESS DOORS AND PULL DOWN LADDERS**

- A. Basis of Design: Attic access doors and pull down ladders as manufactured by Werner Co., [www.wernerco.com](http://www.wernerco.com).
  - 1. Access Ladder 1 - Garage 13 to Equipment Platform 15: Werner Model No. AH2510.
    - a. Style: Folding.

- b. Rough opening: 25in. x 54 in.
  - c. Maximum floor height: 10'-3", minimum ceiling height: 7'-8".
  - d. Load capacity: 375 lb.
  - e. Performance: Industrial.
  - f. Ladder material: Aluminum.
  - g. Door material: Plywood.
  - h. Closer: Gas strut.
  - i. Handrail included: Yes.
  - j. Number of rungs: 11.
2. Access Ladder 2 - Equipment Platform 15 to Attic: Werner Model No. WU2210.
- a. Style: Folding.
  - b. Rough opening: 22.5in. x 54 in.
  - c. Maximum floor height: 10'-4", minimum ceiling height: 7'-11".
  - d. Load capacity: 250 lb.
  - e. Performance: Advanced.
  - f. Ladder material: Wood.
  - g. Door material: Plywood.
  - h. Closer: Spring.
  - i. Handrail included: Yes.
  - j. Number of rungs: 11.
3. Access Ladder 3 - Vestibule 118 to Attic: Werner Model No. WU2210.
- a. Style: Folding.
  - b. Rough opening: 22.5in. x 54 in.
  - c. Maximum floor height: 10'-4", minimum ceiling height: 7'-11".
  - d. Load capacity: 250 lb.
  - e. Performance: Advanced.
  - f. Ladder material: Wood.
  - g. Door material: Plywood.
  - h. Closer: Spring.
  - i. Handrail included: Yes.
  - j. Number of rungs: 11.

B. Submit requests for substitutions accordance with provisions of Section 01 00 00 - General Requirements.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Verify that rough openings are correctly sized and located.

#### **3.2 PREPARATION**

- A. Clean surfaces thoroughly prior to proceeding with this work.
- B. Prepare surfaces using methods recommended by manufacturer for applicable substrates in accordance with project conditions.

#### **3.3 INSTALLATION**

- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in openings, and secure units rigidly in place.
- C. Position units to provide convenient access to concealed equipment when necessary.

**END OF SECTION**

**SECTION 08 33 23**  
**OVERHEAD COILING DOORS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Overhead high-speed coiling doors, operating hardware.
- B. Remote Controllers.
- C. Wiring from electric circuit disconnect to operator to control station.

**1.2 RELATED REQUIREMENTS**

- A. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.
- B. Section 26 05 33.13 - Conduit for Electrical Systems: Conduit from electric circuit to operator and from operator to control station.
- C. Section 26 05 83 - Wiring Connections: Power to disconnect.

**1.3 REFERENCE STANDARDS**

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.
- D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- G. ITS (DIR) - Directory of Listed Products; current edition.
- H. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
- I. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2000, with Errata (2008).
- J. NEMA MG 1 - Motors and Generators; 2018.
- K. UL (DIR) - Online Certifications Directory; Current Edition.
- L. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.
- M. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide general construction, electrical equipment, and component connections and details.
- C. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.
- D. Manufacturer's Installation Instructions: Indicate installation sequence and procedure details, \_\_\_\_\_, and adjustment and alignment instructions.
- E. Maintenance Data: Indicate lubrication requirements and frequency and periodic adjustments required.
- F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

## 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of type specified and with at least three years documented experience and approved by manufacturer.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Basis of Design, Overhead Rapid Coiling Doors:
  - 1. Rytec Corporation; Spiral LP: [www.rytecddoors.com/#sle](http://www.rytecddoors.com/#sle).
- B. Substitutions: See Section 01 00 00 – General Requirements.
  - 1. Products other than basis of design are subject to compliance with specified requirements and prior approval of Architect. By using products other than basis of design, Contractor accepts responsibility for costs associated with any necessary modifications to related work, including any design fees.

### 2.2 RAPID COILING DOORS

- A. Exterior High-Speed Coiling Panel-Slat Doors: Aluminum panel-slat curtain.
  - 1. Door Opening Speed: Variable, adjustable, up to 60 inches (1500 mm) per second.
  - 2. Door Closing Speed: 30 inches (750 mm) per second.
  - 3. Capable of withstanding positive and negative wind loads of 20 psf (958 Pa), without undue deflection or damage to components.
  - 4. Solid Panel-Slats: Double-walled construction with reinforced hinge system and integral weatherseal between slats, designed to allow removal of individual slats without removal of the entire curtain.
    - a. Nominal Panel-Slat Size: 6 inches (150 mm) wide by 1-3/16 inches (30 mm) thick by required length.
    - b. Finish: Powder coated finish from manufacturer's standard colors as selected by the Architect.
  - 5. Vision Panel-Slats: Four (4) Vision Slats. Double-walled construction with reinforced hinge system and integral weatherseal between slats, designed to allow removal of individual slats without removal of the entire curtain.
    - a. Nominal Panel-Slat Size: 6 inches wide by 1-3/16 inches thick by required length.
    - b. Finish: Powder coated finish from manufacturer's standard colors as selected by the Architect.
  - 6. Low-Headroom Track: Horizontal overhead extension of vertical door guides, in lieu of the standard side coiling guides.
  - 7. Side Columns: Manufacturer's standard formed galvanized steel enclosure.
    - a. Weatherstripping: Manufacturer's standard; full height of door.
  - 8. Electric Operation:
    - a. Minimum 2 HP variable speed motor capable of soft acceleration and braking.
  - 9. Mounting: Within framed opening.

### 2.3 MATERIALS AND COMPONENTS

- A. Metal Curtain Construction: Hinged panel-slats.
  - 1. Weatherstripping for Exterior Doors: Moisture and rot proof, resilient type, located at jamb edges, bottom of curtain, and where curtain enters hood enclosure of exterior doors.
  - 2. Aluminum Panel-Slats: ASTM B221 (ASTM B221M), aluminum alloy Type 6063; \_\_\_ inch (\_\_\_ mm) minimum thickness.
- B. Coiling Door Guide Construction: Continuous sheet metal, of profile to retain door in place with snap-on trim, mounting brackets of same metal.

### 2.4 ELECTRIC OPERATION

- A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
  - 1. Provide interlock switches on motor operated units.
  - 2. Automatic opening of gate to be coordinated with the opening of garage door(s) per Section 32 31 00 – Ornamental Cantilever Gate.
- B. Electric Operators:
  - 1. Mounting: Side mounted.
  - 2. Motor Enclosure:

3. Motor Rating: 2 HP (1500 W); continuous duty.
  4. Motor Voltage: 120 volts, single phase, 60 Hz.
  5. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
  6. Controller Enclosure: NEMA 250, Type 4.
  7. Opening Speed: 60 inches per second (1500 mm/sec).
  8. Brake: Manufacturer's standard type, activated by motor controller.
  9. Manual override in case of power failure.
  10. Refer to Section 26 05 83 for electrical connections.
- C. Control Station: Provide standard three button (Open-Close-Stop) momentary-contact control device for each operator complying with UL 325.
1. 24 volt circuit.
  2. Surface mounted, at interior door jamb.
  3. Programmable Inputs and Outputs: Design to accommodate special control applications such as traffic lights, horns, actuation devices, timing sequences, and others.
    - a. Coordinate opening signal between gate and garage door to actuate opening process for each system from a single signal.
  4. Display Type: Self-diagnostic scrolling two-line fluorescent.
  5. Door Travel Limit Regulation: Self adjusting, not requiring use of tools.
  6. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
    - a. Primary Device: Provide electric sensing edge, wireless sensing, NEMA 1 photo eye sensors, or NEMA 4X photo eye sensors as required with momentary-contact control device.
  7. Remote controllers: Provide 6 remote control operators for Owner fleet use.
- D. Metal Curtain Safety Edge: Located at bottom of coiling door, full width, electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object, hollow neoprene covered.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Verify that opening sizes, tolerances and conditions are acceptable.

#### **3.2 INSTALLATION**

- A. Install units in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
- D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- E. Coordinate installation of electrical service with Section 26 05 83.
- F. Complete wiring from disconnect to unit components.
- G. Complete wiring from fire alarm system.
- H. Install enclosure and perimeter trim.

#### **3.3 ADJUSTING**

- A. Adjust operating assemblies for smooth and noiseless operation.

#### **3.4 CLEANING**

- A. Clean installed components.
- B. Remove labels and visible markings.

**END OF SECTION**

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**SECTION 08 43 13**  
**ALUMINUM-FRAMED STOREFRONTS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Interior Aluminum Storefront and Entrances.
- B. Exterior Bullet Resistive Storefront and Entrances.
- C. Glazing.

**1.2 RELATED REQUIREMENTS**

- A. Section 07 25 00 - Weather Barriers.
- B. Section 07 92 00 - Joint Sealants.
- C. Section 08 71 00 - Door Hardware.

**1.3 REFERENCE STANDARDS**

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.
- B. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).
- C. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- D. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- E. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- F. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- G. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors; 2002 (Reapproved 2018).

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
- D. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.
- E. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

**1.6 FIELD CONDITIONS**

- A. Do not install sealants when ambient temperature is less than 40 degrees F (5 degrees C). Maintain this minimum temperature during and 48 hours after installation.

## **PART 2 PRODUCTS**

### **2.1 INTERIOR ALUMINUM STOREFRONT AND ENTRANCES**

- A. Basis-of-Design: Kawneer North America: [www.kawneer.com](http://www.kawneer.com).
  - 1. Trifab™ 400 Framing System (Non-thermal)
  - 2. System Dimensions: 1-3/4" x 4" (44.5 mm x 101.6 mm).
  - 3. Doors: 350 Series medium stile entrance doors (Non-thermal).
  - 4. Glass: Center Plane.
  - 5. Finish: Black anodized.
- B. Glazing: Monolithic interior vision glazing:
  - 1. Type: 1/4" nominal thick fully tempered safety glazing.
  - 2. Tint: Clear.
  - 3. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.
  - 4. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.
- C. Substitutions: See Section 01 00 00 - General Requirements.

### **2.2 EXTERIOR BULLET-RESISTIVE ALUMINUM STOREFRONT AND ENTRANCES**

- A. Basis-of-Design: Architectural Aluminum Door Assembly by Insulgard Security Products; [www.insulgard.com](http://www.insulgard.com).
  - 1. Subject to compliance with requirements, manufacturers of products of equivalent design may be acceptable if approved in accordance with Section 01 00 00 - General Requirements.
  - 2. Factory fabricated door assembly constructed from either 6105-T5 or 6005-T5 extruded aluminum with integral weep design to allow water to vent to the exterior along horizontal members.
  - 3. Wide Stile Door (5 inches by 2 3/8 inches).
  - 4. Performance Classification: AW in accordance with AAMA/NWWDA 101/I.S.2 "Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors"
  - 5. Ballistic Resistant: Level 3 in accordance with UL 752 – Testing for Ballistic Resistance for the complete assembly including framing and glazing.
- B. Fabrication
  - 1. Tolerances: All joints and connections shall be tight, providing hairline joints and true alignment of adjacent members.
  - 2. Door corner joinery of extruded and keyed aluminum spline with a continuous 3/8 inch diameter steel tie rod at top and bottom rails.
- C. Finish
  - 1. Architectural Class I, color coating AA-M10C22A42/A44 Mechanical Finish Chemical Finish: etched, medium matte; 0.70 mils minimum complying with AAMA 611 "Voluntary Specification for Anodized Architectural Aluminum".
  - 2. Color: Black Anodized.
- D. Glazing Material:
  - 1. Bullet resistant glass shall be provided and factory installed by the system fabricator. The security glass unit shall be an insulated, low E, glass clad polycarbonate consisting of a 1/4" heat strengthened outer layer – 1/2" insulating space – 1 1/4" glass clad polycarbonate. Low E coating shall be applied to the #2 surface of the outboard ply and shall be similar in color and performance to Viracon VE1-40.
  - 2. Interior and exterior glazing gaskets: Solid extruded Santoprene or EPDM.
- E. Manufacturer's standard door hardware - included
  - 1. Continuous Hinge.
  - 2. Push Pull.
  - 3. Overhead surface closer.
  - 4. Refer to Section 08 71 00 - Door Hardware for remaining hardware provided by others.
- F. Accessories
  - 1. Anchors: Fully concealed.

### **2.3 HARDWARE**

- A. Refer to Section 08 71 00 - Door Hardware unless noted otherwise.



## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

### **3.2 INSTALLATION**

- A. Install systems in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
- H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- I. Set thresholds in bed of sealant and secure.
- J. Install hardware using templates provided.
  - 1. See Section 08 71 00 for hardware installation requirements.
- K. Install glass and infill panels in accordance with Section 08 80 00, using glazing method required to achieve performance criteria.
- L. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

### **3.3 ADJUSTING**

- A. Adjust operating hardware and sash for smooth operation.

### **3.4 CLEANING**

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.

### **3.5 PROTECTION**

- A. Protect installed products from damage until Date of Substantial Completion.

**END OF SECTION**

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**SECTION 08 54 13**  
**FIBERGLASS WINDOWS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Factory fabricated fiberglass windows with fixed and operating sash.
- B. Glazed by factory.
- C. Operating hardware.
- D. Insect screens.

**1.2 RELATED REQUIREMENTS**

- A. Section 07 25 00 - Weather Barriers: Sealing frames to weather barrier installed on adjacent construction.
- B. Section 07 42 13 – Metal Wall Panels: Metal window trim.
- B. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.
- C. Section 08 87 23 - Safety and Security Films: Exterior applied safety film.

**1.3 REFERENCE STANDARDS**

- A. AAMA 502 - Voluntary Specification for Field Testing of Newly Installed Fenestration Products; 2012.
- B. AAMA 623 - Voluntary Performance Requirements and Test Procedures for Organic Coatings on Fiber Reinforced Thermoset Profiles.
- C. ANSI/AAMA/NWWDA 101/I.S.2 - Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors.
- D. ASTM C 1036 - Flat Glass.
- E. ASTM C 1048 - Heat-Treated Flat Glass--Kind HS, Kind FT Coated and Uncoated Glass.
- F. ASTM E 547 - Water Penetration of Exterior Windows, Curtain Walls and Doors by Cyclic Static Air Pressure Differential.
- G. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- H. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015.
- I. FS L-S-125 - Screening, Insect, Nonmetallic; 1972b, with Notice (1987).

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's product data, including installation instructions.
- C. Shop Drawings: Indicate opening dimensions, framed opening tolerances, affected related work, installation requirements.
- D. Samples: Submit full-size or partial full-size sample of window illustrating glazing system, quality of construction, and color of finish.
- E. Manufacturer's Certificate: Certify that products of this section meet or exceed specified requirements.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Protect finished surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.

**1.6 FIELD CONDITIONS**

- A. Do not install sealants when ambient temperature is less than 40 degrees F (5 degrees C).
- B. Maintain this minimum temperature during and after installation of sealants.

## **PART 2 PRODUCTS**

### **2.1 FIBERGLASS WINDOWS**

- A. Basis of Design: Pella Corporation; Pella Impervia Windows: [www.pellacommercial.com/#sle](http://www.pellacommercial.com/#sle).
- B. Substitutions: See Section 01 60 00 - Product Requirements.

### **2.2 WINDOW UNITS**

- A. Fiberglass Windows: Hollow, tubular, multi-layer fiber reinforced material; factory fabricated; with vision glass, related flashings, anchorage and attachment devices.
  - 1. Configuration: As indicated on drawings .
  - 2. Product Type: C - Casement window and FW - Fixed window in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.
  - 3. Color: Black.
  - 4. Movement: Accommodate movement between window and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
  - 5. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.

### **2.3 COMPONENTS**

#### **2.4 GLASS AND GLAZING MATERIALS**

- A. Float Glass: ASTM C 1036, Quality 1.
  - 1. Tempered Glass: ASTM C 1048.
- B. Type: Polyurethane reactive (PUR) hot-melt glazed, 11/16-inch thick, insulating glass, clear, tempered where required, multi-layer Low-E coated with argon.

#### **2.5 ACCESSORIES**

- A. Insect Screens:
  - 1. Compliance: ASTM D 3656 and SMA 1201.
  - 2. Screen Cloth: [Black Vinyl-coated fiberglass, 18/16 mesh] [Vinyl-coated 18/18 mesh].
  - 3. Set in aluminum frame fitted to inside of each operable window.
  - 4. Complete with necessary hardware.
  - 5. Screen Frame Finish: Baked enamel.
    - a. Color: Black.

#### **2.6 HARDWARE**

- A. Operator:
  - 1. Steel worm-gear operator with hardened gears.
  - 2. Operator Base: Zinc die cast with painted finish.
  - 3. Operator Linkage, Hinge Slide, and Hinge Arms: 300 series stainless steel.
  - 4. Exposed Fasteners: Stainless steel.
  - 5. External Hardware Salt Spray Exposure, ASTM B 117: Exceed 1,000 hours.
- B. Crank Handle Finish
  - 1. Integrated Folding Crank: Satin nickel finish.
- C. Locking System: SureLock System.
  - 1. Single-handle locking system.
  - 2. Operate positive-acting arms that reach out and pull sash into locked position.
  - 3. Casement Windows: One installed on sash 27.5 inches and smaller in frame height, 2 unison operating locks installed on sash over 27.5 inches in frame height.
  - 4. Lock Handle Finish: Brushed Nickel.

#### **2.7 FABRICATION**

- A. Tolerances.
  - 1. Windows shall accommodate the following opening tolerances:

- a. Vertical Dimensions Between High and Low Points: Plus 1/4-inch, minus 0 inch.
- b. Width Dimensions: Plus 1/4-inch, minus 0 inch.
- c. Building Columns or Masonry Openings: Plus or minus 1/4-inch from plumb.

## **2.8 FINISH**

- A. Exterior and Interior Duracast Finish: Factory-applied powder-coat paint, comply with AAMA 623.
  - 1. Color: Black.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify wall openings and adjoining air and vapor seal materials are ready to receive work of this Section.

### **3.2 INSTALLATION**

- A. Install windows in accordance with manufacturer's instructions.
  - 1. Install windows to be weather-tight.
  - 2. Maintain alignment with adjacent work.
  - 3. Secure assembly to framed openings, plumb and square, without distortion.
  - 4. Integrate window system installation with exterior water-resistant barrier using flashing/sealant tape. Apply and integrate flashing/sealant tape with water-resistant barrier using watershed principles in accordance with window manufacturer's instructions.
  - 5. Place interior seal around window perimeter to maintain continuity of building thermal and air barrier using insulating foam sealant.
  - 6. Seal window to exterior wall cladding with sealant and related backing materials at perimeter of assembly.

### **3.3 TOLERANCES**

- A. Maximum Variation from Level or Plumb: 0.06 inches every 3 ft (1.5 mm/m) non-cumulative or 0.5 inches per 100 ft (12 mm/30 m), whichever is less.

### **3.4 ADJUSTING**

- A. Adjust hardware for smooth operation and secure weathertight closure.

### **3.5 CLEANING**

- A. Remove protective material from pre-finished surfaces.
- B. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.

**END OF SECTION**

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**SECTION 08 56 59**  
**SERVICE AND TELLER WINDOW UNITS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Bullet-Resistive Transaction Window

**1.2 RELATED REQUIREMENTS**

- A. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.
- B. Section 09 21 16 - Gypsum Board Assemblies.
- C. Section 10 26 41 - Ballistic Resistant Panels.
- D. Section 26 05 83 - Wiring Connections: Electrical connection to equipment.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate work with adjacent materials specified in other sections and as indicated on drawings and approved shop drawings.
- B. Coordinate electrical service and rough-in requirements.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's product data for specified products indicating materials, operation, glazing, finishes, and installation instructions.
- C. Shop Drawings: Indicate configuration, sizes, rough-in, mounting, anchors and fasteners, and installation clearances.
- D. Test Data: Test reports for specific window model and glazing to be furnished, showing compliance with all specified requirements; window and glazing may be tested separately, provided window test sample adequately simulates the glazing to be used.
- E. Manufacturer Qualification Statement.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Protect windows in accordance with AAMA CW-10 "Care and Handling of Architectural Aluminum from Shop to Site" until Substantial Completion.
- B. Store units in area protected from exposure to weather and vandalism.

**PART 2 PRODUCTS**

**2.1 BULLET-RESISTIVE TRANSACTION WINDOW UNITS**

- A. Basis of Design: AVT Bullet Resisting Transaction Window by Insulgard Security Products; [www.insulgard.com](http://www.insulgard.com)
  - 1. Subject to compliance with requirements, manufacturers of products of equivalent design may be acceptable if approved in accordance with Section 01 00 00 – General Requirements.
- B. Description
  - 1. Factory fabricated window frame constructed from either 6105-T5 or 6005-T5 extruded aluminum for voice transition rails (jamb) and head.
  - 2. Base: Stainless steel.
  - 3. Deal Tray: Recessed stainless steel.
  - 4. Size: 36 inches wide by 48 inches high.
- C. Performance Criteria
  - 1. Ballistic Resistant: Level 3 in accordance with UL 752 – Testing for Ballistic Resistance for the complete assembly including framing, glazing, deal tray and base.
- D. Fabrication

1. Miter or cope corners the full depth of framing; assemble and dress smooth.
  2. Fabricate framing from manufacturer's standard extruded aluminum in thicknesses required for security windows to comply with indicated ballistic resistance requirement.
  3. Tolerances: All joints and connections shall be tight, providing hairline joints and true alignment of adjacent members
  4. Factory glaze security windows
    - a. Secure-Side (interior) Glazing Stops: integral to framing.
    - b. Non-secure side (exterior) Glazing Stops: Removable, coordinated with glazing indicated.
- E. Aluminum Finish
1. Architectural Class I, color coating AA-M10C22A42/A44 Mechanical Finish Chemical Finish: etched, medium matte; 0.70 mils minimum complying with AAMA 611 "Voluntary Specification for Anodized Architectural Aluminum".
    - a. Color: Black Anodized.
- F. Factory Glazing
1. Level 3: 1-1/4 inch SP1250 Lexgard.
  2. Glazing Stops: Finish stops to match security window framing.
    - a. Secure-Side (interior) Glazing Stops: integral to framing.
    - b. Non-secure side (exterior) Glazing Stops: Removable, coordinated with glazing indicated.
- G. Accessories
1. Fasteners: Manufacturer recommended security fasteners. Utilize fastener that require two types of tools to operate fasteners.
  2. Sealants: As indicated in Section 07 92 00 Joint Sealants.
  3. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30-mil thickness per coat.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Verify that window openings are ready for installation of windows.

#### **3.2 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install units in correct orientation (inside/outside or secure/non-secure).
- C. Anchor units securely in manner so as to achieve performance specified.
- D. Set sill members and sill flashing in continuous bead of sealant.

#### **3.3 CLEANING**

- A. Remove protective material from factory finished surfaces.
- B. Clean exposed surfaces promptly after installation without damaging finishes.

#### **3.4 PROTECTION**

- A. Provide temporary protection to ensure that service and teller windows are without damage upon Date of Substantial Completion.

**END OF SECTION**



**SECTION 08 62 23**  
**TUBULAR SKYLIGHTS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Tubular skylights, consisting of skylight dome, reflective tube, and diffuser assembly.

**1.2 RELATED REQUIREMENTS**

- A. Section 07 31 13 - Asphalt Shingles: Flashing-in of skylight base.
- B. Section 06 16 00 - Sheathing.
- C. Section 07 31 13 - Asphalt Shingles.
- D. Section 09 21 16 - Gypsum Board Assemblies.

**1.3 REFERENCE STANDARDS**

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights; 2017.
- B. ASTM A463/A463M - Standard Specification for Steel Sheet, Aluminum-Coated, by the Hot-Dip Process; 2015, with Editorial Revision (2020).
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.
- D. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2020a.
- E. ASTM E 308 - Standard Practice for Computing the Colors of Objects by Using the
- F. CIE System.
- G.
- H. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- 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.
- C. Shop Drawings: Indicate configurations, dimensions, locations, fastening methods, and installation details.

**1.5 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of twenty years experience in the top lighting industry. Secondary products shall be acceptable to the primary manufacturer.
- B. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of twenty years experience in the top lighting industry. Secondary products shall be acceptable to the primary manufacturer.
- C. Pre-Installation Meeting: Contractor shall convene a pre-installation meeting on the project site minimum one week before beginning work of this Section. The meeting shall include the Architect or Owner's Representative and representatives of all related trades to:
  - 1. Coordinate between the at least the following trades.
    - a. Roofing to install the flashing, skylight, and LED Light Kit (when specified).
    - b. Electrical to wire components and program lighting controls.
  - 2. Verify project requirements and site logistics.
  - 3. Assess integrity of the roofing system and building structure.

4. Review manufacturer's installation instructions and warranty requirements.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

## PART 2 PRODUCTS

### 2.1 TUBULAR SKYLIGHTS

- A. Basis of Design: Brighten Up 290 DS, 14 inch dia. Daylighting System as manufactured by Solatube International, Inc.: [www.solatube.com](http://www.solatube.com).
  1. AAMA/WDMA/CSA 101/IS2/A440, Class CW-PG70 size tested 14 inch (350 mm), Type TDDCC.
    - a. Air Infiltration Test: Air infiltration will not exceed 0.30 cfm/sf aperture with a pressure delta of 1.57 psf across the tube when tested in accordance with ASTM E 283.
  2. Capture Zone:
    - a. Roof Dome Assembly: Transparent, UV and impact resistant dome with flashing base supporting dome and top of tube.
      - 1) Outer Dome Glazing: Type DA, 0.125 inch (3.25 mm) minimum thickness impact resistant injection molded acrylic classified as CC2 material; UV inhibiting (100 percent UV C, 100 percent UV B and 98.5 percent UV A), impact modified acrylic blend.
        - (a) Raybender 3000: Variable prism optic molded into outer dome to capture low angle sunlight and limit high angle sunlight.
      - 2) Acrylic Dome Plus Shock Inner Dome Glazing: Type DAI, Inner dome is 0.115 inch (2.9 mm) minimum thickness classified as CC1 material. High impact resistant injection molded acrylic required for high velocity wind zones.
      - 3) Tube Ring: Attached to top of base section; 0.090 inch (2.3 mm) nominal thickness injection molded high impact acrylic; to prevent thermal bridging between base flashing and tubing and channel condensed moisture out of tubing.
      - 4) Dome Seal: Polyethylene foam seal, black, 0.13 inch (3.2 mm) thick by 14.62 (371 mm) diameter, 2 PCF polyethylene foam.
      - 5) LightTracker Reflector, made of aluminum sheet, thickness 0.015 inch (0.4 mm) with Spectralight Infinity. Positioned in the dome to capture low angle sunlight.
    - b. Dome Options:
      - 1) Dome Edge Protection Band: Type PB, for fire rated Class A, B or C roof applications. Aluminized steel nominal thickness of 0.028 inches (0.7 mm).
    - c. Flashings:
      - 1) Roof Flashing Base: One piece, seamless, leak-proof flashing functioning as base support for dome and top of tube.. Sheet steel, corrosion resistant conforming to ASTM A 653/A 653M or ASTM A 463/A 463M or ASTM A792/A 792M, 0.028 inch (0.7 mm) plus or minus .006 inch (.015 mm) thick.
    - d. Curbs: Metal Insulated Roof Curb: Corrosion resistant 18 Gauge hot dipped galvanized steel conforming to ASTM A 653 G90 with continuous welded seams, integrated base plate for water tightness and extra strength, lined with 1-1/2 inch fiberglass fireproof sound attenuating thermal insulation, factory installed 2 by 2 treated wood nailer secured to top ledge of curb. Curb designed for single-ply roofing, lightweight fill or tapered insulation low slope roof types.
  3. Transfer Zone:
    - a. Extension Tubes: Aluminum sheet, thickness 0.015 inch (0.4 mm).
      - 1) Reflective Tubes:
        - (a) Reflective Extension Tube: Type EXX with total length of run as indicated on the Drawings.
        - (b) Interior Finish: Spectralight Infinity with INFRAREduction Technology combining ultra-high Visible Light reflectance with Ultra-low Infrared (IR) reflectance.
        - (c) Color: a\* and b\* (defined by CIE L\*a\*b\* color model) shall not exceed plus 2 or be less than minus 2 as determined in accordance to ASTM E 308.
      - 2) Tube Options:

- (a) Extension Tube Angle Adapter: Provide manufacturer's standard adapters for applications required.
  - (b) Severe Climate Glazing: Type SCG, PET GAG plastic glazing to minimize potential for condensation and heat loss. Nominal thickness is 0.039 inches (0.99 mm).
  - (c) Wire Suspension Kit: Type E, use the wire suspension kit when additional bracing to the structure is required.
  - (d) Thermal Insulation Panel: Type TIP, high-performance dual-glazed, tube insulation system.
4. Delivery Zone:
- a. Ceiling Ring: Injection molded impact resistant acrylic. Nominal thickness is 0.110 inches (2.8 mm).
  - b. Ceiling Ring Seal: Polyethylene foam seal, white, 0.25 inch (6.4 mm) wide by 0.19 inch (4.8 mm) high, 2 PCF polyethylene foam with low tack pressure sensitive adhesive.
  - c. Upper glazing: PET GAG plastic with EPDM low density sponge seal to minimize condensation and bug, dirt, and air infiltration per ASTM E283. The nominal thickness is 0.039 inches (0.99 mm).
  - d. Round Diffusers/Decorative Fixtures: Dual Glazed Diffuser Assembly.
    - 1) Just Frost Decorative Fixture: Type L9, frosted acrylic plastic lens classified as CC2 material (nominal thickness is 0.16 inches (4 mm)), and decorative metal fasteners.
- B. Transfer Zone
- 1. Reflective Extension Tubes: Aluminum sheet, thickness 0.015 inch (0.4 mm).
    - a. Reflective angle adapter tube (standard Top and Bottom Tubes), providing up to a 30-degree angle adjustment.
    - b. Reflective extension tube, Type EXX and Type EL with total length of run as indicated on the Drawings.
    - c. Interior Finish: Spectralight Infinity with INFRAREDuction Technology combining ultra-high Visible Light reflectance with Ultra-low Infrared (IR) reflectance.
- C. Delivery Zone
- 1. Ceiling Ring: Injection molded impact resistant acrylic. Nominal thickness is 0.110 inches (2.8 mm)
  - 2. Ceiling Ring Seal: Polyethylene foam seal, white, 0.25 inch (6.4 mm) wide by 0.19 inch (4.8 mm) high, 2 PCF polyethylene foam with low-tack pressure sensitive adhesive.
  - 3. Upper glazing: PET GAG plastic with EPDM low density sponge seal to minimize condensation and bug, dirt, and air infiltration per ASTM E283. The nominal thickness is 0.039 inches (0.99 mm).
    - a. Softening Effect Lens: Type LS.
  - 4. Round Diffusers/Decorative Fixtures: Dual Glazed Diffuser Assembly.

## 2.2 PERFORMANCE SPECIFICATIONS

- A. Daylight Reflective Tubes: Spectralight Infinity with INFRAREDuction Technology combines ultra-high Visible Light reflectance with Ultra-low Infrared (IR) reflectance. Patented spectrally-selective optical surface yields an average total- and specular reflectance greater than 99.5% percent for the Visible Light spectrum (400 nm to 700 nm) providing maximized visible light transmission and less than 25% reflectance for Infrared (IR) heat wavelengths (750 nm to 2500 nm) for minimized heat transmission, resulting in a spectrally-selective Total Solar Spectrum (250 nm to 2500 nm) reflectance less than 37 percent, as measured using a Perkin Elmer Lambda 1050 spectrophotometer with a Universal Reflectance Accessory. Color: a\* and b\* (defined by CIE L\*a\*b\* color model) shall not exceed plus 2 or be less than minus 2 as determined in accordance to ASTM E 308.

## 2.3 ACCESSORIES

- A. Fasteners: Same material as metals being fastened, non-magnetic steel, noncorrosive metal of type recommended by manufacturer, or injection molded nylon.
- B. Suspension Wire: Steel, annealed, galvanized finish, size and type for application and ceiling system requirement.
- C. Sealant: Polyurethane or copolymer based elastomeric sealant as provided or recommended by manufacturer.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### **3.2 PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### **3.3 INSTALLATION**

- A. Install in accordance with manufacturer's written instructions.
- B. Coordinate installation with substrates, air and vapor retarders, roof insulation, roofing membrane, and flashing to ensure that each element of the Work performs properly and that finished installation is weather tight.
  - 1. Install flashing to produce weatherproof seal with curb and overlap with roofing system termination at top of curb.
  - 2. Provide thermal isolation when components penetrate or disrupt building insulation. Pack fibrous insulation in rough opening to maintain continuity of thermal barriers.
  - 3. Coordinate attachment and seal of perimeter air and vapor barrier material.
- C. After installation of first unit, field test to determine adequacy of installation. Conduct water test in presence of Owner, Architect, or Contractor, or their designated representative. Correct if needed before proceeding with installation of subsequent units.
- D. Clean exposed surfaces according to manufacturer's written instructions. Touch up damaged metal coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

### **3.4 PROTECTION**

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

**END OF SECTION**

**SECTION 08 71 00**  
**DOOR HARDWARE**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Door Hardware.
- B. Door Hardware Sets.

**1.2 RELATED REQUIREMENTS**

- A. Section 08 11 13 – Hollow Metal Doors and Frames.
- B. Section 08 14 16 – Flush Wood Doors.
- C. Section 08 43 13 – Aluminum Framed Storefronts.

**1.3 CODES AND REFERENCE STANDARDS**

- A. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
- B. ICC/IBC - International Building Code.
- C. NFPA 70 - National Electrical Code.
- D. NFPA 80 - Fire Doors and Windows.
- E. NFPA 101 - Life Safety Code.
- F. NFPA 105 - Installation of Smoke Door Assemblies.
- G. State Building Codes, Local Amendments.
- H. ANSI/BHMA Certified Product Standards - A156 Series.
- I. UL10C – Positive Pressure Fire Tests of Door Assemblies.
- J. ANSI/UL 294 – Access Control System Units.
- K. ULC-S319 - Electronic Access Control Systems.
- L. ULC-60839-11-1, Alarm and Electronic Security Systems - Part 11-1: Electronic Access Control Systems - System and Components Requirements.
- M. UL 305 – Panic Hardware.
- N. ULC-S132, Emergency Exit and Emergency Fire Exit Hardware.
- O. ULC-S533 – Egress Door Securing and Releasing Devices.
- P. ANSI/UL 437- Key Locks.
- Q. ULC-S328, - Burglary Resistant Key Locks.

**1.4 SUBMITTALS**

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
  - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
  - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
  - 3. Content: Include the following information:
    - a. Type, style, function, size, label, hand, and finish of each door hardware item.
    - b. Manufacturer of each item.

- c. Fastenings and other pertinent information.
  - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
  - e. Explanation of abbreviations, symbols, and codes contained in schedule.
  - f. Mounting locations for door hardware.
  - g. Door and frame sizes and materials.
  - h. Warranty information for each product.
4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
- 1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
    - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
    - b. Complete (risers, point-to-point) access control system block wiring diagrams.
    - c. Wiring instructions for each electronic component scheduled herein.
  - 2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.
- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Informational Submittals:
- 1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

## 1.5 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).
- C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
  - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
  - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

- G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
  - 1. Function of building, purpose of each area and degree of security required.
  - 2. Plans for existing and future key system expansion.
  - 3. Requirements for key control storage and software.
  - 4. Installation of permanent keys, cylinder cores and software.
  - 5. Address and requirements for delivery of keys.
- H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
  - 1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
  - 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
  - 3. Review sequence of operation narratives for each unique access controlled opening.
  - 4. Review and finalize construction schedule and verify availability of materials.
  - 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

#### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.
- D.
- E. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- F. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

#### **1.7 COORDINATION**

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

#### **1.7 WARRANTY**

- C. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

- D. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
  - 1. Structural failures including excessive deflection, cracking, or breakage.
  - 2. Faulty operation of the hardware.
  - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 4. Electrical component defects and failures within the systems operation.
- E. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- F. Special Warranty Periods:
  - 1. Ten years for mortise locks and latches.
  - 2. Seven years for heavy duty cylindrical (bored) locks and latches.
  - 3. Five years for exit hardware.
  - 4. Twenty five years for manual overhead door closer bodies.
  - 5. Five years for motorized electric latch retraction exit devices.
  - 6. Two years for electromechanical door hardware.

## 1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

## PART 2 PRODUCTS

### 2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
  - 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

### 2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
  - 1. Quantity: Provide the following hinge quantity:
    - a. Two Hinges: For doors with heights up to 60 inches.
    - b. Three Hinges: For doors with heights 61 to 90 inches.
    - c. Four Hinges: For doors with heights 91 to 120 inches.
    - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
  - 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
    - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
    - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
  - 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
    - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
    - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
  - 4. Hinge Options: Comply with the following:



- a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
- 5. Manufacturers:
  - a. Bommer Industries (BO).
  - b. Hager Companies (HA).
  - c. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK).

### 2.3 POWER TRANSFER DEVICES

- A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
  - 1. Manufacturers:
    - a. Hager Companies (HA) - ETW-QC (# wires) Option.
    - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - QC (# wires) Option.
- B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.
  - 1. Provide one each of the following tools as part of the base bid contract:
    - a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Electrical Connecting Kit: QC-R001.
    - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Connector Hand Tool: QC-R003.
  - 2. Manufacturers:
    - a. Hager Companies (HA) - Quick Connect.
    - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) – QC-C Series.

### 2.4 DOOR OPERATING TRIM

- A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.
  - 1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
  - 2. Furnish dust proof strikes for bottom bolts.
  - 3. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
  - 4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
  - 5. Manufacturers:
    - a. Door Controls International (DC).
    - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
    - c. Trimco (TC).
- B. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
  - 1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
  - 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
  - 3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
  - 4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
  - 5. Manufacturers:
    - a. Hiawatha, Inc. (HI).
    - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
    - c. Trimco (TC).

## 2.5 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Cylinders: Original manufacturer cylinders complying with the following:
  - 1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
  - 2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
  - 3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
  - 4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
  - 5. Keyway: Match Facility Standard.
- C. Interchangeable Cores: Provide small format interchangeable cores as specified, core insert, removable by use of a special key; usable with other manufacturers' cylinders.
- D. Keying System: Each type of lock and cylinders to be factory keyed.
  - 1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
  - 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
  - 3. Existing System: Field verify and key cylinders to match Owner's existing system.
- E. Key Quantity: Provide the following minimum number of keys:
  - 1. Change Keys per Cylinder: Two (2)
  - 2. Master Keys (per Master Key Level/Group): Five (5).
  - 3. Construction Keys (where required): Ten (10).
- F. Construction Keying: Provide construction master keyed cylinders.
- G. Key Registration List (Bitting List):
  - 1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
  - 2. Provide transcript list in writing or electronic file as directed by the Owner.

## 2.6 KEY CONTROL

- A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.
  - 1. Manufacturers:
    - a. Lund Equipment (LU).
    - b. MMF Industries (MM).
    - c. Telkee (TK).

## 2.7 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.
  - 1. Where specified, provide status indicators with highly reflective color and wording for "locked/unlocked" or "vacant/occupied" with custom wording options if required. Indicator to be located above the cylinder with the inside thumb-turn not blocking the visibility of the indicator status. Indicator window size to be a minimum of 2.1" x 0.6" with a curved design allowing a 180 degree viewing angle with protective covering to prevent tampering.
  - 2. Manufacturers:
    - a. dormakaba Best (BE) – 45H Series.
    - b. No Substitution.
- B. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Operational Grade 1 Certified Products Directory (CPD) listed.
  - 1. Furnish with solid cast levers, standard 2 3/4" backset, and 1/2" (3/4" at rated paired openings) throw brass or stainless steel latchbolt.
  - 2. Locks are to be non-handed and fully field reversible.

3. Extended cycle test: Locks to have been cycle tested in ordinance with ANSI/BHMA 156.2 requirements to 2 million cycles.
4. Manufacturers:
  - a. dormakaba Best (BE) – 9K Series.
  - b. No Substitution.

## 2.8 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
  1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
  2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
  3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
  4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.
- B. Standards: Comply with the following:
  1. Strikes for Mortise Locks and Latches: BHMA A156.13.
  2. Strikes for Bored Locks and Latches: BHMA A156.2.
  3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
  4. Dustproof Strikes: BHMA A156.16.

## 2.9 ELECTRIC STRIKES

- A. Standard Electric Strikes: Electric strikes tested to ANSI/BHMA A156.31, Grade 1, for use on non-rated or fire rated openings. Strikes shall be of stainless steel construction tested to a minimum of 1500 pounds of static strength and 70 foot-pounds of dynamic strength with a minimum endurance of 1 million operating cycles. Provide strikes with 12 or 24 VDC capability, fail-secure unless otherwise specified. Where specified provide latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.
  1. Manufacturers:
    - a. HES (HS) - 1006 Series.
- B. Surface Mounted Rim Electric Strikes: Surface mounted rim exit device electric strikes tested to ANSI/BHMA A156.31, Grade 1, and UL Listed for both Burglary Resistance and for use on fire rated door assemblies. Construction includes internally mounted solenoid with two heavy-duty, stainless steel locking mechanisms operating independently to provide tamper resistance. Strikes tested for a minimum of 500,000 operating cycles. Provide strikes with 12 or 24 VDC capability supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike. Strike requires no cutting to the jamb prior to installation.
  1. Manufacturers:
    - a. HES (HS) - 9400/9500/9600/9700/9800 Series.
- C. Provide electric strikes with in-line power controller and surge suppressor by the same manufacturer as the strike with the combined products having a five year warranty.

## 2.10 CONVENTIONAL EXIT DEVICES

- A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
  1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
  2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
  3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
  4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.

5. Electromechanical Options: Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified in hardware sets. Include any specific controllers when conventional power supplies are not sufficient to provide the proper inrush current.
  6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
    - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
    - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
  7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
  8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
  9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
  10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
  11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.
1. Manufacturers:
    - a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
    - b. Detex (DE) – Advantex.
    - c. Sargent Manufacturing (SA) - 80 Series.

## 2.11 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
  2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
  3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
  4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
  5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
  6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.
1. Manufacturers:
    - a. Corbin Russwin Hardware (RU) – DC6000 Series.
    - b. Norton Door Controls (NO) – 7500 Series.
    - c. Sargent Manufacturing (SA) – 351 Series.

## 2.12 ARCHITECTURAL TRIM

- A. Door Protective Trim
1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
  2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on

pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.

3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
  - a. Stainless Steel: 300 grade, 050-inch thick.
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:
  - a. Hiawatha, Inc. (HI).
  - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
  - c. Trimco (TC).

### 2.13 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
  1. Manufacturers:
    - a. Hiawatha, Inc. (HI).
    - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
    - c. Trimco (TC).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
  1. Manufacturers:
    - a. Rixson Door Controls (RF).
    - b. Sargent Manufacturing (SA).

### 2.14 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
  1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
  1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Manufacturers:
  1. National Guard Products (NG).
  2. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
  3. Reese Enterprises, Inc. (RE).

## **2.15 ELECTRONIC ACCESSORIES**

- A. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.
  - 1. Manufacturers:
    - a. Securitron (SU) - DPS Series.
- B. Intelligent Switching Power Supplies: Provide power supplies with single, dual or multi-voltage configurations at 12 and/or 24VDC. Power Supply shall have battery backup function with an integrated battery charging circuit. The power supply shall have a standard, integrated Fire Alarm Interface (FAI). The power supply shall provide capability for secondary voltage, power distribution, direct lock control and network monitoring through add on modules. The power supply shall be expandable up to 16 individually protected outputs. Output modules shall provide individually protected, continuous outputs and/or individually protected, relay controlled outputs. Network modules shall provide remote monitoring functions such as status reporting, fault reporting and information logging.
  - 2. Manufacturers:
    - a. Securitron (SU) - AQL Series.

## **2.16 FABRICATION**

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

## **2.17 FINISHES**

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

### **3.2 PREPARATION**

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

### **3.3 INSTALLATION**

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
  - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
  - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
  3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
  4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

### **3.4 FIELD QUALITY CONTROL**

- A. Field Inspection (Punch Report): Reference Division 01 Sections "Closeout Procedures" and "Cash Allowances". Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.
1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.
  2. Submit documentation of incomplete items in the following formats:
    - a. PDF electronic file.
    - b. Electronic formatted file integrated with the Openings Studio™ door opening management software platform.

### **3.5 ADJUSTING**

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

### **3.6 CLEANING AND PROTECTION**

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

### **3.7 DEMONSTRATION**

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

### **3.8 DOOR HARDWARE SETS**

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
1. Quantities listed are for each pair of doors, or for each single door.
  2. The supplier is responsible for handling and sizing all products.
  3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.

4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

B. Manufacturer's Abbreviations:

1. MK - McKinney
2. RO - Rockwood
3. SA - SARGENT
4. BE - dormakaba Best
5. HS - HES
6. RF - Rixson
7. NO - Norton
8. PE - Pemko
9. HD - HID
10. SU - Securitron
11. OT - Other

**HARDWARE SETS**

**Set: 1.0**

3 Hinge (heavy weight)	T4A3386 (NRP)	US32D	MK
1 Rim Exit (storeroom lvr)	LC 43 8804 ETL	US32D	SA
1 Cylinder	Rim / Mortise (as req'd)	626	BE
1 Electric Strike	9600-LBM	630	HS
1 SMART Pac Bridge Rectifier	2005M3		HS
1 Surf Overhead Stop	9-X36 (5458)	630	RF
1 Closer - Top Jamb	J7500	689	NO
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO
1 Threshold - 6" T-Break	253x3AFG		PE
1 Gasketing	2891AS (head)		PE
2 Gasketing	290AS (jamb)		PE
1 Rain Guard	346C (frame width)		PE
1 Sweep x Drip	3452CNB x dr width		PE
1 E-Lynx Harness (Jamb)	QC-C1500P		MK
1 Card Reader	By Security Contractor	BLK	HD
1 Door Position Switch	DPS-M / W-GY (as req'd)		SU

Notes:

Install gasketing at head before installing closer(s).  
Install gasketing at jamb before installing rim device strike.

Door normally closed and locked.

Valid card read unlocks electric strike for entry.

Key override available.

Free egress at all times.

**Set: 2.0**

3 Hinge (heavy weight)	T4A3386 (NRP)	US32D	MK
1 Rim Exit (storeroom)	LC 43 8804 Less Pull	US32D	SA
1 Cylinder	Rim / Mortise (as req'd)	626	BE
1 Electric Strike	9600-LBM	630	HS
1 SMART Pac Bridge Rectifier	2005M3		HS
1 Offset Pull	RM201	US32D	RO
1 Surf Overhead Stop	9-X36 (5458)	630	RF
1 Closer - Top Jamb	J7500	689	NO
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO



1	Threshold - 6" T-Break	253x3AFG		PE
1	Gasketing	2891AS (head)		PE
2	Gasketing	290AS (jambs)		PE
1	Rain Guard	346C (frame width)		PE
1	Sweep x Drip	3452CNB x dr width		PE
1	E-Lynx Harness (Jamb)	QC-C1500P		MK
1	Card Reader	By Security Contractor	BLK	HD
1	Door Position Switch	DPS-M / W-GY (as req'd)		SU

Notes:

Install gasketing at head before installing closer(s).  
Install gasketing at jambs before installing rim device strike.

Door normally closed and locked.

Valid card read unlocks electric strike for entry.

Key override available.

Free egress at all times.

**Set: 3.0**

3	Hinge (heavy weight)	T4A3786 (NRP)	US26D	MK
1	Rim Exit (storeroom)	LC 43 8804 Less Pull	US32D	SA
1	Cylinder	Rim / Mortise (as req'd)	626	BE
1	Electric Strike	9600-LBM	630	HS
1	SMART Pac Bridge Rectifier	2005M3		HS
1	Offset Pull	RM201	US32D	RO
1	Surf Overhead Stop	9-X36 (5458)	630	RF
1	Closer - Top Jamb	J7500	689	NO
1	Kick Plate	K1050 10" 4BE CSK	US32D	RO
1	E-Lynx Harness (Jamb)	QC-C1500P		MK
1	Door Position Switch	DPS-M / W-GY (as req'd)		SU

Notes:

Install electric strike now, for possible use in the future.

Exit device can be dogged, so door acts as push/pull, until Owner decides whether to secure door with card reader.

Door normally closed and locked.

Valid card read unlocks electric strike for entry.

Key override available.

Free egress at all times.

**Set: 4.0**

3	Hinge (heavy weight)	T4A3386 (NRP)	US32D	MK
1	Rim Exit (passage)	12 43 8815 ETL	US32D	SA
1	Closer	PR7500 / Reg 7500 (as req'd)	689	NO
1	Kick Plate	K1050 10" 4BE CSK	US32D	RO
1	Wall Stop	402 / 405 (as req'd)	US26D	RO
1	Threshold - 1/4" Saddle	271A		PE
1	Perimeter Gasketing	S88BL (head & jambs)		PE
1	Sweep	315CN		PE

**Set: 5.0**

3	Hinge	TA2314 (NRP)	US32D	MK
1	Rim Exit (passage)	12 43 8815 ETL	US32D	SA
1	Closer	PR7500 / Reg 7500 (as req'd)	689	NO
1	Kick Plate	K1050 10" 4BE CSK	US32D	RO

1	Wall Stop	402 / 405 (as req'd)	US26D	RO
1	Perimeter Gasketing	S88BL (head & jambs)		PE

**Set: 6.0**

3	Hinge (heavy weight)	T4A3786 (NRP)	US26D	MK
1	Storeroom Lock	9K37D 15C	626	BE
1	Electric Strike	1006CS	630	HS
1	Closer	PR7500 / Reg 7500 (as req'd)	689	NO
1	Kick Plate	K1050 10" 4BE CSK	US32D	RO
1	Wall Stop	402 / 405 (as req'd)	US26D	RO
1	E-Lynx Harness (Jamb)	QC-C1500P		MK
1	Card Reader	By Security Contractor	BLK	HD

Notes:

Door normally closed and locked.

Valid card read unlocks electric strike for entry.

Key override available.

Free egress at all times.

**Set: 7.0**

2	Hinge (heavy weight)	T4A3786 (NRP)	US26D	MK
1	Hinge x ETW (heavy weight)	T4A3786-QC_	US26D	MK
1	Rim Exit (elec lvr, fail safe, rated)	12 43 8875 ETL	US32D	SA
1	Cylinder	Rim / Mortise (as req'd)	626	BE
1	Closer	PR7500 / Reg 7500 (as req'd)	689	NO
1	Kick Plate	K1050 10" 4BE CSK	US32D	RO
1	Wall Stop	402 / 405 (as req'd)	US26D	RO
1	Perimeter Gasketing	S88BL (head & jambs)		PE
1	E-Lynx Harness (Jamb)	QC-C1500P		MK
1	E-Lynx Harness (Door)	QC-C*** (length / type as req'd)		MK
1	Card Reader	By Security Contractor	BLK	HD
1	Power Distribution Board	AQL4-R8E1		SU

Notes:

Door normally closed and locked by power.

Valid card read unlocks outside lever for entry. Key override available.

Exit device tied to fire alarm, unlocks on fire alarm or loss of power to the door, but remains latched.

Free egress at all times.

**Set: 8.0**

3	Hinge	TA2714 (NRP)	US26D	MK
1	Storeroom Lock	9K37D 15C	626	BE
1	Wall Stop	402 / 405 (as req'd)	US26D	RO

**Set: 9.0**

6	Hinge	TA2714 (NRP)	US26D	MK
1	Manual Flush Bolt	555/557 (as req'd)	US26D	RO
1	Storeroom Lock	9K37D 15C	626	BE
2	Surf Overhead Hold Open	10-326	630	RF

**Set: 10.0**

3	Hinge	TA2714 (NRP)	US26D	MK
1	Storeroom Lock	9K37D 15C	626	BE

1 Closer	PR7500 / Reg 7500 (as req'd)	689	NO
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO
1 Wall Stop	402 / 405 (as req'd)	US26D	RO

**Set: 11.0**

3 Hinge	TA2714 (NRP)	US26D	MK
1 Storeroom Lock	9K37D 15C	626	BE
1 Surf Overhead Stop	10-X36 (5258)	630	RF

**Set: 12.0**

1 Storeroom Lock	9K37D 15C	626	BE
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Notes:

Re-use balance of existing hardware.

Field verify compatibility of new hardware with existing door and frame.

**Set: 13.0**

3 Hinge	TA2714 (NRP)	US26D	MK
1 Classroom Lock	9K37R 15C	626	BE
1 Wall Stop	402 / 405 (as req'd)	US26D	RO

**Set: 14.0**

3 Hinge	TA2714 (NRP)	US26D	MK
1 Entrance Lock	9K37AB 15C	626	BE
1 Closer	PR7500 / Reg 7500 (as req'd)	689	NO
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO
1 Wall Stop	402 / 405 (as req'd)	US26D	RO

**Set: 15.0**

3 Hinge	TA2714 (NRP)	US26D	MK
1 Entrance Lock	9K37AB 15C	626	BE
1 Surf Overhead Stop	10-X36 (5258)	630	RF

**Set: 16.0**

3 Hinge	TA2714 (NRP)	US26D	MK
1 Entrance Lock	9K37AB 15C	626	BE
1 Wall Stop	402 / 405 (as req'd)	US26D	RO

**Set: 17.0**

3 Hinge	TA2714 (NRP)	US26D	MK
1 Entrance Lock	9K37AB 15C	626	BE
1 Wall Stop	402 / 405 (as req'd)	US26D	RO
1 Sound Seals	S773BL (head & jambs)		PE
1 Door Bottom	STC411APK36		PE

**Set: 18.0**

3 Hinge	TA2314 (NRP)	US32D	MK
1 Privacy Mortise Lock (OCC/VAC)	45HOLT 15H VIN VIT	626	BE
1 Closer x Stop/HO	CLP7500T	689	NO
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO

Notes:

Lever to be at same height as cylindrical locks.

**Set: 19.0**

3 Hinge	TA2714 (NRP)	US26D	MK
1 Passage Latch	9K30N 15C	626	BE
1 Closer x Stop/HO	CLP7500T	689	NO
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO

**Set: 20.0**

3 Hinge	TA2714 (NRP)	US26D	MK
1 Passage Latch	9K30N 15C	626	BE
1 Wall Stop	402 / 405 (as req'd)	US26D	RO

**Set: 21.0**

3 Hinge	TA2714 (NRP)	US26D	MK
1 Push Bar x Offset Pull	RM251	US32D	RO
1 Closer	PR7500 / Reg 7500 (as req'd)	689	NO
1 Wall Stop	402 / 405 (as req'd)	US26D	RO

**Set: 22.0**

3 Hinge	TA2314 (NRP)	US32D	MK
1 Pull Plate	126x70C	US32D	RO
1 Push Plate	70E	US32D	RO
1 Closer	PR7500 / Reg 7500 (as req'd)	689	NO
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO
1 Mop Plate	K1050 4" 4BE CSK	US32D	RO
1 Door Stop & Keeper	477	US26D	RO

**Set: 23.0**

3 Hinge	TA2714 (NRP)	US26D	MK
1 Pull Plate	126x70C	US32D	RO
1 Push Plate	70E	US32D	RO
1 Closer	PR7500 / Reg 7500 (as req'd)	689	NO
1 Kick Plate	K1050 10" 4BE CSK	US32D	RO
1 Door Stop & Keeper	477	US26D	RO

**Set: 24.0**

1 All Hardware	By Door Manufacturer		OT
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**END OF SECTION**

**SECTION 08 83 00**  
**MIRRORS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Tempered safety glass mirrors.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry; Wood blocking
- B. Section 09 21 16 - Gypsum Board Assemblies
- C. Section 09 91 23 - Interior Painting
- D. Section 10 28 00 – Toilet, Bath and Laundry Accessories: Restroom and Locker Room channel framed mirrors.

**1.3 REFERENCE STANDARDS**

- A. ASTM C1036 - Standard Specification for Flat Glass; 2016.
- B. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.
- C. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- D. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2018.
- E. GANA (GM) - GANA Glazing Manual; 2008.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements for submittal procedures.
- B. Product Data on Mirror Types: Submit structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C. Manufacturer's Certificate: Certify that mirrors, meets or exceeds specified requirements.

**PART 2 PRODUCTS**

**2.1 MATERIALS**

- A. Mirror Design Criteria: Select materials and/or provide supports as required to limit mirror material deflection to 1/200, or to the flexure limit of glass, with full recovery of glazing materials, whichever is less.
- B. Mirror Glass: ASTM C1036, Type 1 - Transparent Flat, Class 1 - Clear, Quality - Q1 (high-quality mirrors); silvering, protective coating, and quality requirements in compliance with ASTM C1503.
  - 1. Thickness: 3/16 inch (5 mm).
  - 2. Size: and locations As indicated on drawings.

**2.2 ACCESSORIES**

- A. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness.
- B. Mirror Attachment Accessories: Stainless steel clips.

**PART 3 EXECUTION**

**3.1 PREPARATION**

- A. Prepare installation in accordance with ASTM C1193 for solvent release sealants, and install sealant in accordance with manufacturer's instructions.

**3.2 INSTALLATION**

- A. Install mirrors in accordance with manufacturer's recommendations.
- B. Set mirrors plumb and level, and free of optical distortion.

- C. Set mirrors with edge clearance free of surrounding construction including countertops or backsplashes.

**3.3 CLEANING**

- A. Remove labels after work is complete.
- B. Clean mirrors and adjacent surfaces.

**END OF SECTION**

**SECTION 08 87 23**  
**SAFETY AND SECURITY FILMS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Glazing film applied to new Fiberglass Windows.

**1.2 RELATED REQUIREMENTS**

- A. Section 08 54 13 - Fiberglass Windows.

**1.3 REFERENCE STANDARDS**

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting; 2018.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Record of product certification for safety requirements.
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements and recommendations.
  - 4. Installation methods.
- C. Shop Drawings: Detailing installation of film, anchoring accessories, and sealant.
- D. Samples: For each film product to be used, minimum size 4 inches (102 mm) by 6 inches (152 mm), representing actual product, color, and patterns.
- E. Test Reports: Detailed reports of full-scale chamber tests to specified criteria, using assemblies identical to those required for this project.

**1.5 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Glazing film manufacturer specializing in manufacture of safety glazing films with minimum 10 years successful experience.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of authorities having jurisdiction.

**1.7 FIELD CONDITIONS**

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

**PART 2 PRODUCTS**

**2.1 SAFETY AND SECURITY GLAZING FILM**

- A. Basis of Design: S40X Exterior Safety Window Film, manufactured by 3M Commercial Solutions Division; [3m.com/windowfilm](http://3m.com/windowfilm).
  - 1. Exterior applied, anti-graffiti, glass fragment retention film.
  - 2. Film Properties:
    - a. Film Thickness: 4 mil.
    - b. Construction: Single Ply.

- c. Tensile Strength: 25,000 psi.
  - d. Break Strength: 100 lb/in.
  - e. Elongation at Break: >116%.
  - f. Peel Strength: 5 lb/in.
  - g. Abrasion Resistance: 5%.
- B. Accessory Materials: As recommended or required by film manufacturer.
  - C. Glass Cleaner: As recommended by glazing film manufacturer.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Exterior Field -Applied Film: Verify that existing conditions are adequate for proper application and performance of film.
- B. Examine glass and frames. Verify that existing conditions are adequate for proper application and performance of film.

#### **3.2 PREPARATION**

- A. Clean glass of dust, dirt, paint, oil, grease, mildew, mold, and other contaminants that would inhibit adhesion.
- B. Immediately prior to applying film, thoroughly wash glass with neutral cleaning solution.
- C. Protect adjacent surfaces.
- D. Do not begin installation until substrates have been properly prepared.

#### **3.3 INSTALLATION**

- A. Do not apply glazing film when surface temperature is less than 40 degrees F (4 degrees C) or if precipitation is imminent.
- B. Install in accordance with manufacturer's instructions, without air bubbles, wrinkles, streaks, bands, thin spots, pinholes, or gaps, as required to achieve specified performance.
- C. Seams: Seam film only as required to accommodate material sizes; form seams vertically without overlaps and gaps; do not install with horizontal seams.
- D. Clean glass and anchoring accessories following installation. Remove excess sealants and other glazing materials from adjacent finished surfaces.
- E. Remove labels and protective covers.

**END OF SECTION**



**SECTION 09 05 61**  
**COMMON WORK RESULTS FOR FLOORING PREPARATION**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
  - 1. Resilient tile and sheet.
  - 2. Carpet tile.
  - 3. Thin-set ceramic tile and stone tile.
- B. Removal of existing floor coverings.
- C. Preparation of new and existing concrete floor slabs for installation of floor coverings.
- D. Patching compound.
- E. Preparation of new and existing wood-based floors and subfloors for installation of new floor coverings.

**1.2 RELATED REQUIREMENTS**

- A. Section 01 74 19 - Construction Waste Management and Disposal: Handling of existing floor coverings removed.
- B. Section 03 30 00 - Cast-in-Place Concrete: Moisture emission reducing curing and sealing compound for slabs to receive adhered flooring, to prevent moisture content-related flooring failures; to remain in place, not to be removed.

**1.3 REFERENCE STANDARDS**

- A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2020a.
- B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete; 2020.
- C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2019, with Editorial Revision (2020).
- D. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.
- E. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2011.

**1.4 QUALITY ASSURANCE**

- A. Contractor may perform adhesive and bond test with Contractor's own personnel or hire a testing agency. Test results shall meet manufacturer's installation requirements.

**1.5 FIELD CONDITIONS**

- A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F (18 degrees C) or more than 85 degrees F (30 degrees C).
- B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

**PART 2 PRODUCTS**

**2.1 MATERIALS**

- A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
  - 1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
  - 2. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.

## **PART 3 EXECUTION**

### **3.1 CONCRETE SLAB PREPARATION**

- A. Perform following operations in the order indicated:
  - 1. Preliminary cleaning.
  - 2. Specified remediation, if required.
  - 3. Patching, smoothing, and leveling, as required.
  - 4. Other preparation specified.
  - 5. Adhesive bond and compatibility test.
  - 6. Protection.

### **3.2 REMOVAL OF EXISTING FLOOR COVERINGS**

- A. Comply with local, State, and federal regulations and recommendations of RFCI Recommended Work Practices for Removal of Resilient Floor Coverings, as applicable to floor covering being removed.
- B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

### **3.3 ADHESIVE BOND AND COMPATIBILITY TESTING**

- A. Comply with requirements and recommendations of floor covering manufacturer.

**END OF SECTION**

**SECTION 09 21 16**  
**GYPSUM BOARD ASSEMBLIES**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Performance criteria for gypsum board assemblies.
- B. Acoustic insulation.
- C. Gypsum wallboard.
- D. Joint treatment and accessories.
- E. Textured finish system.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Building framing and sheathing.
- B. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.
- C. Section 07 84 00 - Firestopping: Top-of-wall assemblies at fire-resistance-rated walls.
- D. Section 07 92 00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.
- E. Section 09 30 00 - Tiling: Tile backing board.

**1.3 REFERENCE STANDARDS**

- A. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2018.
- B. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017.
- C. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board; 2004 (Reapproved 2020).
- D. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).
- E. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.
- F. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2019b.
- G. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2018.
- H. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2019.
- I. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- J. GA-216 - Application and Finishing of Gypsum Panel Products; 2016.
- K. GA-600 - Fire Resistance Design Manual; 2015.
- L. UL (FRD) - Fire Resistance Directory; Current Edition.

**1.4 SUBMITTALS<sup>general</sup>**

- A. See Section 01 00 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on gypsum board, accessories, and joint finishing system.

**PART 2 PRODUCTS**

**2.1 GYPSUM BOARD ASSEMBLIES**

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
- B. Fire-Resistance-Rated Assemblies: Provide completed assemblies with the following characteristics:
  - 1. Fire-Resistance-Rated Partitions: UL listed assembly numbers as indicated on the drawings.
  - 2. Fire-Resistance-Rated Ceilings and Soffits: UL listed assembly numbers as indicated on the drawings.

3. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).

## **2.2 BOARD MATERIALS**

- A. Manufacturers - Gypsum-Based Board:
  1. American Gypsum Company: [www.americangypsum.com/#sle](http://www.americangypsum.com/#sle).
  2. CertainTeed Corporation: [www.certainteed.com/#sle](http://www.certainteed.com/#sle).
  3. Georgia-Pacific Gypsum: [www.gpgypsum.com/#sle](http://www.gpgypsum.com/#sle).
  4. National Gypsum Company: [www.nationalgypsum.com/#sle](http://www.nationalgypsum.com/#sle).
  5. USG Corporation: [www.usg.com/#sle](http://www.usg.com/#sle).
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
  1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
  2. At Assemblies Indicated with Fire-Resistance Rating: Use Type X (walls) or Type C (ceilings) required by UL or GA indicated tested assembly.
  3. Thicknesses as indicated on the drawings.
- C. Moisture and Mold-Resistant - Regular Type: With moisture and mold-resistant core and surfaces. Complying with ASTM C 1396/C1396M and ASTM C630/C630M as applicable to type of gypsum board indicated.

## **2.3 Gypsum Wallboard ACCESSORIES**

- A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: as indicated on the drawings, or if not indicated, thickness to match stud thickness.
- B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
  1. Products:
    - a. Franklin International, Inc; Titebond GREENchoice Professional Acoustical Smoke and Sound Sealant: [www.titebond.com/#sle](http://www.titebond.com/#sle).
    - b. Liquid Nails, a brand of PPG Architectural Coatings: [www.liquidnails.com/#sle](http://www.liquidnails.com/#sle).
    - c. Specified Technologies Inc; Smoke N Sound Acoustical Sealant: [www.stifirestop.com/#sle](http://www.stifirestop.com/#sle).
- C. Beads, Joint Accessories, and Other Trim: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
- D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
  1. Joint Compound: Drying type, vinyl-based, ready-mixed.
- E. High Build Drywall Surfer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.
- F. Textured Finish Materials: Latex-based compound; plain.
- G. Nails for Attachment to Wood Members: ASTM C514.
- H. Adhesive for Attachment to Wood, ASTM C557 and Metal:

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that project conditions are appropriate for work of this section to commence.

### **3.2 ACOUSTIC ACCESSORIES INSTALLATION**

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

### **3.3 BOARD INSTALLATION**

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

- B. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- C. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For nonrated assemblies, install as follows:
  - 1. Single-Layer Applications: Adhesive application.

### **3.4 INSTALLATION OF TRIM AND ACCESSORIES**

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

### **3.5 JOINT TREATMENT**

- A. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
  - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings or light orange peel texture, unless otherwise indicated.
  - 2. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
  - 3. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.
- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
  - 1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).
- D. Spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

### **3.6 TEXTURE FINISH**

- A. Apply finish texture coating by means of spraying apparatus in accordance with manufacturer's instructions and to match approved sample.

**END OF SECTION**

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## SECTION 09 30 00

### TILING

#### **PART 1 GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Tile for shower receptors.
- D. Cementitious backer board as tile substrate.
- E. Non-ceramic trim.

##### **1.2 RELATED REQUIREMENTS**

- A. Section 07 92 00 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.
- B. Section 09 21 16 - Gypsum Board Assemblies: Tile backer board.
- C. Section 22 40 00 - Plumbing Fixtures.

##### **1.3 REFERENCE STANDARDS**

- A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2019.
- B. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017.
- C. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2018.
- D. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2010 (Reaffirmed 2016).
- E. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2019.

##### **1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
- D. Samples: Provide three samples in full size of each tile type.
- E. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. Extra Tile: 1 percent of each size, color, and surface finish combination, but not less than five of each type.

##### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

##### **1.6 FIELD CONDITIONS**

- A. Maintain ambient and substrate temperature above 50 degrees F (10 degrees C) and below 100 degrees F (38 degrees C) during installation and curing of setting materials.

#### **PART 2 PRODUCTS**

##### **2.1 TILE**

- A. Provide tiling products as outlined under Finish Specifications on Drawing Sheet A811.

## 2.2 TRIM AND ACCESSORIES

- A. Edge-protection and transition profiles for floors.
  - 1. Schluter®-SCHIENE; Schluter Systems, L.P., 194 Pleasant Ridge Road, Plattsburgh, NY 12901-5841; [www.schluter.com](http://www.schluter.com).
  - 2. L-shaped profile with 1/8" (3.2 mm) wide top section and vertical wall section that together form the visible surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
  - 3. Anchor Leg: Straight.
  - 4. Material: EB-Brushed Stainless Steel Type 304 = V2A.
  - 5. Height:
- B. Edge-protection profiles for walls.
  - 1. Schluter®-JOLLY; Schluter Systems, L.P., 194 Pleasant Ridge Road, Plattsburgh, NY 12901-5841; [www.schluter.com](http://www.schluter.com).
  - 2. Description: L-shaped profile with 1/8"(3.2 mm) wide top section and vertical wall section that together form the visible surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
  - 3. Anchor Leg: Straight.
  - 4. Material: Satin Nickel Anodized Aluminum.
  - 5. Height:
- C. Movement Joints.
  - 1. Schluter®-DILEX-KSN; Schluter Systems, L.P., 194 Pleasant Ridge Road, Plattsburgh, NY 12901-5841; [www.schluter.com](http://www.schluter.com).
  - 2. Description: profile with integrated trapezoid-perforated anchoring legs, connected by a 7/16"(11 mm) wide replaceable thermoplastic rubber movement zone, which together form the visible surface.
  - 3. Anchoring Legs Material: E -Stainless Steel Type 304 = V2A.
  - 4. Movement Zone Color: As selected by Architect.
  - 5. Height:
- D. Uncoupling Membrane over wood floor substrate and floor structure.
  - 1. Schluter®-DITRA with Schluter®-KERDI-BAND; Schluter Systems, L.P., 194 Pleasant Ridge Road, Plattsburgh, NY 12901-5841; [www.schluter.com](http://www.schluter.com).
  - 2. Description: 1/8"(3 mm) thick, orange, high-density polyethylene membrane with a grid structure of 1/2"x 1/2"(12 mm x 12 mm) square cavities, each cut back in a dovetail configuration, and a polypropylene anchoring fleece laminated to its underside. Conforms to definition for uncoupling membranes in the Tile Council of North America Handbook for Ceramic Tile Installation.
  - 3. Waterproofing Membrane: 0.004" (4 mil) thick, polyethylene membrane, with polypropylene fleece laminated on both sides.
- E. Setting Materials.
  - 1. Schluter®-ALL-SET or Schluter®-FAST-SET; Schluter Systems, L.P., 194 Pleasant Ridge Road, Plattsburgh, NY 12901-5841; [www.schluter.com](http://www.schluter.com).
  - 2. Description : (ALL-SET) specialized sag-resistant modified thin-set mortar specifically formulated for use with Schluter membranes and boards. It is engineered for use both under and over all DITRA and KERDI products. ALL-SET is suitable for use with ceramic, porcelain, and stone tile, including large and heavy tile, in conjunction with Schluter®-Systems' uncoupling and waterproofing membranes. Meets the requirements of ANSI A118.4T, A118.11, and A118.15T.
  - 3. Description: (FAST-SET) specialized rapid-setting sag-resistant modified thin-set mortar specifically formulated for use with Schluter membranes and boards. It is engineered for use both under and overall DITRA and KERDI products. FAST-SET is suitable for use with ceramic, porcelain, and stone tile, including large and heavy tile, in conjunction with Schluter®-Systems' uncoupling and waterproofing membranes. Meets the requirements of ANSI A118.4TF, A118.11, and A118.15TF.
  - 4. Color: Grey.

## 2.3 GROUTS

- A. High Performance Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.
  - 1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
  - 2. Use sanded grout for joints 1/8 inch (3.2 mm) wide and larger; use unsanded grout for joints less than 1/8 inch (3.2 mm) wide.
  - 3. Color(s): As indicated on drawings.



- B. Stain Resistant Grout Additive: Liquid admixture for sanded and unsanded cement-based grouts; mix with dry grout material in place of water.

## **2.4 Maintenance Materials**

- A. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
  - 1. Applications: Between tile and plumbing fixtures.
  - 2. Color(s): As selected by Architect from manufacturer's full line.
- B. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
  - 1. Composition: Water-based colorless silicone.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
- B. Verify that required floor-mounted utilities are in correct location.

### **3.2 PREPARATION**

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
- D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

### **3.3 INSTALLATION - GENERAL**

- A. Install tile and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.19 , manufacturer's instructions, and TCNA (HB) recommendations.
- B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- E. Form internal angles square and external angles bullnosed.
- F. Sound tile after setting. Replace hollow sounding units.
- G. Keep control and expansion joints free of mortar, grout, and adhesive.
- H. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- I. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.
- J. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

### **3.4 INSTALLATION - FLOORS - THIN-SET METHODS**

- A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
- B. Over wood substrate with backer board underlayment and uncoupling membrane under tile, install in accordance with TCNA (HB) Method F144, for cementitious backer boards, with standard grout.
- C. Consult Schluter®-Systems' current technical literature for proper design and installation instructions.

### **3.5 INSTALLATION - WALL TILE**

- A. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244 using membrane at showers.

**3.6 CLEANING**

- A. Clean tile and grout surfaces.

**3.7 PROTECTION**

- A. Do not permit traffic over finished floor surface for 4 days after installation.

**END OF SECTION**

**SECTION 09 51 00**  
**ACOUSTICAL CEILINGS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

**1.2 RELATED REQUIREMENTS**

- A. Section 21 13 00 - Fire-Suppression Sprinkler Systems: Sprinkler heads in ceiling system.
- B. Section 23 37 00 - Air Outlets and Inlets: Air diffusion devices in ceiling.
- C. Section 26 51 00 - Interior Lighting: Light fixtures in ceiling system.
- D. Section 28 46 00 - Fire Detection and Alarm: Fire alarm components in ceiling system.

**1.3 REFERENCE STANDARDS**

- A. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.
- B. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2020.
- C. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2019.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning.
- C. Product Data: Provide data on suspension system components and acoustical units.
- D. Samples: Submit two samples 4 inch X 4 inch in size illustrating material and finish of acoustical units.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
  - 2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

**PART 2 PRODUCTS**

**2.1 ACOUSTICAL UNITS**

- A. Refer to Finish Specifications as outlined on Drawing Sheet A811.

**2.2 SUSPENSION SYSTEM(S)**

- A. Refer to Finish Specifications as outlined on Drawing Sheet A811.

**2.3 ACCESSORIES**

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Hanger Wire: 12 gauge, 0.08 inch (2 mm) galvanized steel wire.
- C. Perimeter Moldings: Same metal and finish as grid.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION - SUSPENSION SYSTEM**

- A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.
- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
  - 1. Use longest practical lengths.
- D. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- E. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- F. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- G. Support fixture loads using supplementary hangers located within 6 inches (152 mm) of each corner, or support components independently.
- H. Do not eccentrically load system or induce rotation of runners.

### **3.2 INSTALLATION - ACOUSTICAL UNITS**

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- E. Cutting Acoustical Units: Make field cut edges of same profile as factory edges.

**END OF SECTION**

**SECTION 09 65 00  
RESILIENT FLOORING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Resilient sheet flooring.
- B. Resilient tile flooring.
- C. Resilient base.
- D. Resilient stair accessories.
- E. Installation accessories.

**1.2 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied resilient flooring.
- B. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

**1.3 REFERENCE STANDARDS**

- A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2019, with Editorial Revision (2020).
- B. ASTM F1344 - Standard Specification for Rubber Floor Tile; 2015.
- C. ASTM F1861 - Standard Specification for Resilient Wall Base; 2016.
- D. ASTM F2169 - Standard Specification for Resilient Stair Treads; 2015 (Reapproved 2020).
- E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.
- D. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
  - 2. Extra Stair Materials: Quantity equivalent to 5 percent of each type and color.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Store all materials off of the floor in an acclimatized, weather-tight space.
- B. Protect roll materials from damage by storing per manufacturer's recommendations.

**PART 2 PRODUCTS**

**2.1 RESILIENT TILE FLOORING**

- A. Refer to Room Finish Schedule and Finish Specifications as outlined on Drawing Sheet A811.

**2.2 STAIR COVERING**

- A. Stair Treads with Integral Risers: Rubber; full height of riser, full width and depth of tread in one piece; tapered thickness.
  - 1. Refer to Finish Specifications as outlined on Drawing Sheet A811.

- B. Stair Stringers: Full height in one piece and in maximum available lengths, matching treads in material and color.
  - 1. Nominal Thickness: 0.080 inch (2.0 mm).

### **2.3 RESILIENT BASE**

- A. Refer to Room Finish Schedule and Finish Specifications as outlined on Drawing Sheet A811.

### **2.4 ACCESSORIES**

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
- C. Moldings, Transition and Edge Strips: Same material as flooring.

## **PART 3 EXECUTION**

### **3.1 PREPARATION**

- A. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.
- B. Prohibit traffic until filler is fully cured.

### **3.2 Installation - General**

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install in accordance with manufacturer's written instructions.
- C. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
- D. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

### **3.3 Installation - Tile Flooring**

- A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

### **3.4 Installation - Resilient Base**

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 24 inches (\_\_\_\_ mm) between joints.
- B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.
- C. Install base on solid backing. Bond tightly to wall and floor surfaces.
- D. Scribe and fit to door frames and other interruptions.

### **3.5 Installation - Stair Coverings**

- A. Install stair coverings in one piece for full width and depth of tread.
- B. Install stringers configured tightly to stair profile.
- C. Adhere over entire surface. Fit accurately and securely.

### **3.6 CLEANING**

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's written instructions.

### **3.7 PROTECTION**

- A. Prohibit traffic on resilient flooring for 48 hours after installation.

**END OF SECTION**

## SECTION 09 68 13

### TILE CARPETING

#### **PART 1 GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Carpet tile, fully adhered.

##### **1.2 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied flooring.
- B. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

##### **1.3 REFERENCE STANDARDS**

- A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2019, with Editorial Revision (2020).
- B. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.
- C. CRI 104 - Standard for Installation of Commercial Carpet; 2015.

##### **1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
- C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
  - 2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

##### **1.5 FIELD CONDITIONS**

- A. Store materials in area of installation for minimum period of 24 hours prior to installation.

#### **PART 2 PRODUCTS**

##### **2.1 MATERIALS**

- A. Refer to Room Finish Schedule and Finish Specifications as outlined on Drawing Sheet A811.

##### **2.2 ACCESSORIES**

- A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.
- B. Edge Strips: Rubber, color as selected by Architect.
- C. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

#### **PART 3 EXECUTION**

##### **3.1 EXAMINATION**

- A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.
- B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.

- C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
  - 1. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

### **3.2 PREPARATION**

- A. Prepare floor substrates for installation of flooring in accordance with Section 09 05 61.

### **3.3 INSTALLATION**

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install carpet tile in accordance with manufacturer's instructions.
- C. Blend carpet from different cartons to ensure minimal variation in color match.
- D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.
- E. Fully adhere carpet tile to substrate.
- F. Trim carpet tile neatly at walls and around interruptions.
- G. Complete installation of edge strips, concealing exposed edges.

### **3.4 CLEANING**

- A. Remove excess adhesive without damage, from floor, base, and wall surfaces.
- B. Clean and vacuum carpet surfaces.

**END OF SECTION**



**SECTION 09 91 13**  
**EXTERIOR PAINTING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
  - 1. Exposed surfaces of steel lintels and ledge angles.
  - 2. Steel stair handrails and guardrails.
  - 2. Pavement Markings.
- D. Do Not Paint or Finish the Following Items:
  - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
  - 2. Items indicated to receive other finishes.
  - 3. Items indicated to remain unfinished.
  - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
  - 5. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, zinc, and lead.
  - 6. Floors, unless specifically indicated.
  - 7. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco.

**1.2 RELATED REQUIREMENTS**

- A. Section 05 50 00 - Metal Fabrications: Shop-primed items.
- B. Section 09 91 23 - Interior Painting.
- C. Section 09 96 00 - High-Performance Coatings.
- D. Section 32 17 23.13 - Painted Pavement Markings: Painted pavement markings.

**1.3 REFERENCE STANDARDS**

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.
- C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
  - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
  - 2. MPI product number (e.g. MPI #47).
  - 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
- C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
- D. Manufacturer's Instructions: Indicate special surface preparation procedures.
- E. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements, for additional provisions.

2. Extra Paint and Finish Materials: 1 gallon (4 L) of each color; from the same product run, store where directed.
3. Label each container with color in addition to the manufacturer's label.

### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

### **1.6 FIELD CONDITIONS**

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.

### **2.2 PAINTS AND FINISHES - GENERAL**

- A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.
  1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
  2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
  3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
  4. Supply each paint material in quantity required to complete entire project's work from a single production run.
  5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

### **2.3 PAINT SYSTEMS - EXTERIOR**

- A. High Performance Coatings 4-Step Paint Process: Provide at all exterior exposed structural steel.
  1. Surface Preparation: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  2. Primer:
    - a. Tnumec, Series 94-H2O Hydro-Zinc, zinc-rich primer, applied in shop.
    - b. S-W, Corothane I, GalvaPac Zinc Primer, applied in shop.
  3. Intermediate Coat:
    - a. Tnemec, Series 27WB Typoxy, epoxy coating.
    - b. S-W, Macropoxy 646, epoxy-polamide coating.
  4. Finish Coat:
    - a. Tnemec, Series 1095 Endura-Shield, aliphatic acrylic polyurethane coating.
    - b. S-W, Acrolon 218, polyester modified, aliphatic, acrylic polyurethane.
- B. Exterior Galvanized Metal Fabrications Indicated to be Painted:
  1. Primer:
    - a. Diamond Vogel: Mult-E-Prime 500 Hi-Build Epoxy Primer
    - b. Pittsburg Paints; 95-245 Series Pitt-Guard DTR Polyimide Epoxy Coating.
    - c. Sherwin-Williams: Tile-Clad High Solids.

- d. Tnemec; Series 27 WB Typoxy Polyimide Epoxy.
- 2. Intermediate Coat:
  - a. Diamond Vogel: Mult-E-Poxy 180 Epoxy Mastic.
  - b. Pittsburg Paints; 95-8800 Series Pitthane High-Build Urethane Enamel.
  - c. Sherwin-Williams; Macropoxy 646.
  - d. Tnemec; None required.
- 3. Topcoat:
  - a. Diamond Vogel; Multi-Thane 330 High Solids Acrylic Polyurethane.
  - b. Pittsburg Paints; 95-8800 Series Pitthane High-Build Urethane Enamel.
  - c. Sherwin-Williams: Acrolon 218.
  - d. Tnemec; Series 1075 Endura-Shield II.
- C. Pavement Markings: White Traffic Paint: DuPont #LF32M30P, Hawkins-Hawkins Co. #V10-31, or equal.
- D. Primers: As recommended by coating manufacturer for specific substrate, unless otherwise specified.
- E. Shellac: Pure, white type.

## **2.4 ACCESSORY MATERIALS**

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.

### **3.2 PREPARATION**

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- F. Galvanized Surfaces:
  - 1. Prepare surface according to SSPC-SP 3.

### **3.3 PRIMING**

- A. Apply primer to all surfaces, unless specifically not required by coating manufacturer. Apply in accordance with coating manufacturer's instructions.

### **3.4 COATING APPLICATION**

- A. Apply coatings in accordance with manufacturer's instructions, to thicknesses specified.
- B. Apply in uniform thickness coats, without runs, drips, pinholes, brush marks, or variations in color, texture, or finish. Finish edges, crevices, corners, and other changes in dimension with full coating thickness.

### **3.4 CLEANING**

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

### **3.5 PROTECTION**

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

**END OF SECTION**

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**SECTION 09 91 23**  
**INTERIOR PAINTING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
  - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
  - 2. Prime surfaces to receive wall coverings.
  - 3. Mechanical and Electrical:
    - a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
  - 4. Stenciling at Fire/Smoke Walls and Partitions: Refer to Section 07 05 33 – Fire and Smoke Assembly Identification.
  - 5. Vehicular pavement markings for interior stalls.
- D. Do Not Paint or Finish the Following Items:
  - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
  - 2. Items indicated to receive other finishes.
  - 3. Items indicated to remain unfinished.
  - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
  - 5. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, and lead items.
  - 6. Floors, unless specifically indicated.
  - 7. Ceramic and other tiles.
  - 8. Brick, architectural concrete, cast stone, integrally colored plaster and stucco.
  - 9. Glass.
  - 10. Concealed pipes, ducts, and conduits.

**1.2 RELATED REQUIREMENTS**

- A. Section 05 50 00 - Metal Fabrications: Shop-primed items.
- B. Section 09 21 16 – Gypsum Wallboard Assemblies.

**1.3 REFERENCE STANDARDS**

- A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.
- B. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2017).
- C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.
- D. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
- E. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

**1.4 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
  - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
  - 2. MPI product number (e.g. MPI #47).
  - 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
- C. Samples: Submit two paper "draw down" samples, 8-1/2 by 11 inches (216 by 279 mm) in size, illustrating range of colors available for each finishing product specified.

- D. Manufacturer's Instructions: Indicate special surface preparation procedures.
- E. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. Extra Paint and Finish Materials: 1 gallon (4 L) of each color; from the same product run, store where directed.
  - 2. Label each container with color in addition to the manufacturer's label.

### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

### **1.6 FIELD CONDITIONS**

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

### **2.2 PAINTS AND FINISHES - GENERAL**

- A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
- B. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
  - 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
  - 2. Supply each paint material in quantity required to complete entire project's work from a single production run.
  - 3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

### **2.3 PAINT SYSTEMS - INTERIOR**

- A. Interior Gypsum Board Surfaces to be Painted:
  - 1. Two top coats and one coat primer.
  - 2. Top Coats for Walls: Interior Eggshell Latex.
  - 3. Top Coats for Ceilings: Interior Flat Latex.
  - 4. Primer: As recommended by top coat manufacturer for specific substrate.
- B. Concrete and Concrete Masonry Units: Interior Semi-Gloss Latex.
- C. Ferrous and Galvanized Metal Surfaces to be Painted: For surfaces subject to frequent contact by occupants, including metals:
  - 1. Medium duty applications include doors, door frames, railings, handrails, guardrails, balustrades, and miscellaneous metals.
  - 2. Two top coats and one coat primer.
  - 3. Top Coat(s): Interior Light Industrial Coating, Water Based.

- D. Interior Epoxy Coating: Including gypsum board and concrete masonry units.
  - 1. Primer for gypsum wallboard: As recommended by manufacturer.
  - 2. Primer for concrete masonry: Masonry filler.
  - 3. Finish Coatings: Two coats, semi-gloss finish.
- E. Dry Fall: Metals; exposed structure and overhead-mounted services, including shop primed steel deck, structural steel, metal fabrications, galvanized ducts, galvanized conduit, and galvanized piping.
  - 1. One top coat.
  - 2. Top Coat: Latex Dry Fall.
- F. Transparent Finish on Wood.
  - 1. Two coats MPI Danish Oil (MPI # 92).
- G. White Pavement Markings Paint: DuPont #LF32M30P, Hawkins-Hawkins Co. #V10-31, or equal.
  - 1. 1 coat prior to floor sealer.
- H. Transparent Finish on Concrete Floors.
  - 1. 2 coats sealer.
  - 2. Sealer: Water Based for Concrete Floors.
    - a. Products:
      - 1) Tamms; Clearseal WB 300.
      - 2) L & M Construction Chemicals; Dress & Seal WB
      - 3) W.R. Meadows; VOCOMP - 25.

#### **2.4 ACCESSORY MATERIALS**

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.
- D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
  - 1. Gypsum Wallboard: 12 percent.
  - 2. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
  - 3. Concrete Floors and Traffic Surfaces: 8 percent.

#### **3.2 PREPARATION**

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Concrete:
  - 1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
  - 2. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.
- F. Masonry:
  - 1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
  - 2. Prepare surface as recommended by top coat manufacturer.
- G. Concrete Floors and Traffic Surfaces: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.

- H. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- I. Galvanized Surfaces:
  - 1. Prepare surface according to SSPC-SP 3.
- J. Ferrous Metal:
  - 1. Solvent clean according to SSPC-SP 1.
  - 2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
  - 3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.
- K. Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.

### 3.3 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's written instructions.
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- E. Include areas visible when permanent or built-in fixtures, grilles, convactor covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
  - 1. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
  - 2. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
  - 3. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
  - 4. Finish doors on tops, bottoms, and side edges the same as exterior faces.
- F. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.
- G. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- H. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
- I. Sand wood and metal surfaces lightly between coats to achieve required finish.
- J. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- K. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- L. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.
- M. Concrete Floor Sealer: Follow manufacturer's instructions for preparation and installation.

### 3.4 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
- B. At end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
- C. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting.
- D. Provide "Wet Paint" signs to protect newly painted finishes.

### 3.5 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

**END OF SECTION**



**SECTION 10 11 50**  
**GLASS MARKERBOARDS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Fixed, glass, dry-erase markerboards.

**1.2 SUBMITTALS**

- A. Refer to Section 01 00 00 – General Requirements for submittal requirements.
- B. Product Data: Submit manufacturer's product data, including installation instructions.
- C. Samples: Submit manufacturer's sample of dry-erase boards, minimum 4 inches by 4 inches.
- D. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- E. Cleaning Instructions: Submit manufacturer's cleaning instructions.

**1.3 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling Requirements:
  - 1. Store and handle materials in accordance with manufacturer's instructions.
  - 2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
  - 3. Store materials in clean, dry area indoors.
  - 4. Protect materials during storage, handling, and installation to prevent damage.

**PART 2 PRODUCTS**

**2.1 GLASS MARKER BOARDS**

- A. Refer to Interior Finish Specifications on Drawing Sheet A811.
- B. Magnetic Glass Markerboards.
  - 1. Glass: ¼ -inch thick, tempered, low-iron, extra clear, safety writing glass with polished edges
  - 2. Glass Markerboard writing surface: Smooth finish intended for use with dry-erase markers
  - 3. Glass Markerboard Locations and Sizes: As indicated on the drawings.
  - 4. Back-Painted Color: Refer to Drawing Sheet A811 for color.
  - 5. Backing: Magnetic glass markerboards have steel backing permanently adhered to the back of the glass.

**PART 3 EXECUTION**

**3.1 EXAMINATION**

- A. Examine walls to receive markerboards.
- B. Do not begin installation until unacceptable conditions are corrected.

**3.2 INSTALLATION**

- A. Install markerboards in accordance with manufacturer's instructions at locations indicated on the drawings.
- B. Install markerboards plumb, level, and square.
- C. Mount markerboards securely in place with included stainless steel standoffs.

**3.3 CLEANING**

- A. Clean markerboards promptly after installation in accordance with manufacturer's instructions.
- B. Do not use harsh cleaning materials or methods that could damage surface.

**END OF SECTION**

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## SECTION 10 14 00

### SIGNAGE

#### **PART 1 GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Interior room and door signs.
- C. Interior emergency evacuation maps.
- D. Exterior LED lit building identification signs.

##### **1.2 REFERENCE STANDARDS**

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. IBC 2009 1007.8 – 1007.11 complying with ICC A117.1 - Accessible and Usable Buildings and Facilities.

##### **1.3 SUBMITTALS**

- A. Refer to Section 01 00 00 – General Requirements submittal requirements and procedures.
- B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
  - 1. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
  - 2. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
  - 3. Submit for approval by Owner through Architect prior to fabrication.
  - 4. Refer to Interior Signage Schedule at the end of this section.
- D. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.
- E. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.
- F. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

##### **1.4 FIELD CONDITIONS**

- A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.
- B. Maintain this minimum temperature during and after installation of signs.

#### **PART 2 PRODUCTS**

##### **2.1 INTERIOR SIGNAGE**

- A. Basis-of-Design: ASI Signage Innovations; Inform Plaque Signs; [www.asisignage.com](http://www.asisignage.com).
  - 1. Provide Basis-of-Design product or comparable product approved during the bid process. Characteristics that comparable products must match include, but are not limited to, color, form, aesthetic, and performance.
- B. Sign Materials
  - 1. Sign Face: High impact clear acrylic, frosted finish with dimensional acrylic letters and braille on face; set in Dark Bronze anodized aluminum frame.
  - 2. Tactile Graphics and Text: Provide tactile copy and Grade 2 Braille raised 1/32 inch minimum from plaque surface.
  - 3. Provide lettering and graphics precisely formed, uniformly opaque to comply with ADA regulations and requirements indicated for size, style, spacing, content, position and colors.

- C. Colors: High contrast semi-matte integral colors for graphics; ASI standard color as selected by the Architect. All integral resins are U.V. stabilized utilizing automotive grade pigments.
- D. Fabrication Options:
  - 1. Panel Depth: 0.374 inch thickness.
  - 2. Attachable back plate panel depth: 0.125 inch thickness.
  - 3. Sign Shape: As approved by the Architect.
  - 4. Letter Style and Size: As approved by the Architect.
- E. Integral Window Options:
  - 1. Surface, lateral slot, separate changeable graphic insert plaque construction in compliance with indicated materials, thicknesses, finish, colors, designs, shapes, sizes, and details. Surface graphics to comply with manufacturer's standard process for precisely formed, uniformly opaque graphics for indicated style, spacing, content, position and colors.
  - 2. Graphic Insert: Die-cut paper as supplied by ASI, and laser printed in accordance with manufacturer's proprietary software.
  - 3. Visible Window Opening Location: Custom.
  - 4. Insert Format: Lens: Clear, 0.08 inch thick, matte first surface.
- F. Rest Rooms: Identify with pictograms, the names "MEN", "WOMEN", and "RESTROOM", and braille.
- G. Assembly Spaces: Identify with "Maximum Occupancy" and occupancy number per code requirements.

## **2.2 EXTERIOR SIGNAGE**

- A. Basis of Design: ASI Signage Innovations, [www.asisignage.com](http://www.asisignage.com).
  - 1. South Elevation: Series LF Fabricated Metal Dimensional Letter Sign.
  - 2. West Elevation: Custom aluminum plate with acrylic-backed letters;
    - 1. Sign Material: Aluminum, baked enamel finish.
    - 2. Mounting method: Projecting mount.
  - 3. Lighting:
    - a. South Elevation: Halo LED lighting.
    - b. West Elevation: Back Lit, letters and perimeter, LED lighting.
  - 4. Fabrication: Create signage to required sizes and layout as indicated on the drawings. Comply with requirements indicated for design, dimensions, finish, color, and details of construction.
  - 5. Refer to exterior building elevations on Drawing Sheets A201.
- B. Accessories:
  - 1. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.
  - 2. Exposed Screws: Stainless steel.

## **2.3 ACCESSORIES**

- A. Tape Adhesive: Double sided tape, permanent adhesive.
- B. Wall-mounted acrylic holders Emergency Evacuation Maps.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install neatly, with horizontal edges level.
- C. Locate signs where indicated by Architect.
- D. Protect from damage until Substantial Completion; repair or replace damage items.

### 3.2 INTERIOR SIGN SCHEDULE

room number / room name / (number of signs required)

#### ROOM SIGNS:

Lower Level	Upper Level	
02 MECHANICAL ROOM	103 RESTROOM (gender neutral)	114 SERGEANT
02A SERVER	104 TRAINING	115 SERGEANT
02B ELEVATOR EQUIPMENT	105 INTERVIEW	116 LIEUTENANT
02C MECHANICAL	106 INTERVIEW	117 COMMUNITY DEPUTY
03 COMMUNITY DEPUTY STORAGE	107 RECEPTION	119 JANITOR
04 EXERCISE (2)	108 DEPUTY OFFICES	121 DETECTIVE
05 STORAGE	109 DICTATION	122 DETECTIVE
07 MEN LOCKER ROOM (2)	110 DICTATION	123 MEN
08 WOMEN LOCKER ROOM (2)	111 OFFICE	124 WOMEN
09 EVIDENCE PROCESSING	112 OFFICE	STAIR1 (2)
10 ARMORY	113 OFFICE	STAIR 2 (1) (lower level)
14 STORAGE	113 OFFICE	

#### MISCELLANEOUS SIGNS:

IN CASE OF FIRE, ELEVATOR IS OUT OF SERVICES. USE EXIT STAIRS OR RAMP (1 – lower level)

IN CASE OF FIRE, ELEVATOR IS OUT OF SERVICES. USE EXIT (1 – upper level)

EMERGENCY EGRESS MAPS, WALL MOUNTED, CLEAR ACRYLIC HOLDERS (4)

GARAGE 13 – (VAN) ACCESSIBLE PARKING SIGN

EXTERIOR VAN ACCESSIBLE PARKING SIGNS (2)

SITE EGRESS STOP SIGN (2)

**END OF SECTION**

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**SECTION 10 21 13.19**  
**PLASTIC TOILET COMPARTMENTS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Solid plastic toilet compartments. - floor mounted
- B. Urinal screens - wall mounted.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Blocking and supports.
- B. Section 10 28 00 - Toilet, Bath, and Laundry Accessories.

**1.3 REFERENCE STANDARDS**

- A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- B. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- D. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2019.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide data on panel construction, hardware, and accessories.
- C. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.
- D. Samples: Submit two samples of partition panels, 2 by 2 inch in size illustrating panel finish, color, and sheen.
- E. Manufacturer's Installation Instructions: Indicate special procedures.

**PART 2 PRODUCTS**

**2.1 SOLID PLASTIC TOILET COMPARTMENTS**

- A. Basis of Design: Scranton Products, which is located at: 801 E. Corey St.; Scranton, PA 18505; [www.scrantonproducts.com](http://www.scrantonproducts.com).
  - 1. Description Factory fabricated doors, pilasters, and divider panels made of solid molded high density polyethylene (HDPE), tested in accordance with NFPA 286; floor-mounted unbraced.
    - a. Color: Refer to Interior Finish Specifications outlined on Drawing Sheet A811.
    - b. Doors:
      - 1) Thickness: 1 inch.
      - 2) Width for Accessible stalls: 36 inch, out-swinging.
      - 3) Width: 24 inch.
      - 4) Height: 72 inch.
    - c. Panels:
      - 1) Thickness: 1 inch.
      - 2) Height: 72 inch.
    - d. Pilasters:
      - 1) Thickness: 1 inch.
      - 2) Width: As required to fit space; minimum 3 inch.

**2.2 ACCESSORIES**

- A. Pilaster Shoes: Stainless steel, satin finish, 3 inches high; concealing floor fastenings.
  - 1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.

- B. Head Rails: Extruded aluminum, anti-grip profile.
  - 1. Size: Manufacturer's standard size.
- C. Wall and Pilaster Brackets: Stainless steel; manufacturer's standard type for conditions indicated on drawings.
- D. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.
  - 1. For attaching panels and pilasters to brackets: Through-bolts and nuts; tamper proof.
- E. Hinges: Stainless steel, manufacturer's standard finish.
  - 1. Continuous-type hinge, self closing.
- F. Door Hardware: Stainless steel, manufacturer's standard finish.
  - 1. Door Latch: Slide type with exterior emergency access feature.
  - 2. Provide door pull for outswinging doors.
- G. Coat Hook: One per compartment, mounted on inside of door.

### **PART 3 EXECUTION**

#### **3.1 INSTALLATION**

- A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.
- B. Maintain 3/8 inch to 1/2 inch (9 mm to 13 mm) space between wall and panels and between wall and end pilasters.
- C. Attach panel brackets securely to walls using anchor devices.
- D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.
- E. Field touch-up of scratches or damaged finish will not be permitted. Replace damaged or scratched materials with new materials.

#### **3.2 ADJUSTING**

- A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch (5 mm).
- B. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.

**END OF SECTION**



**SECTION 10 26 00**  
**WALL AND DOOR PROTECTION**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Corner guards.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Blocking for wall and corner guard anchors.
- B. Section 09 21 16 - Gypsum Board Assemblies: Placement of supports in stud wall construction.
- C. Section 09 91 23 - Interior Painting.

**1.3 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate physical dimensions, features, wall mounting brackets with mounted measurements, anchorage details, and rough-in measurements.
- C. Manufacturer's Instructions: Indicate special procedures, perimeter conditions requiring special attention, and \_\_\_\_\_.

**PART 2 PRODUCTS**

**2.1 CORNER GUARDS**

- A. Basis-of-Design: Provide Stainless Steel Corner Guards, Model BCGS, by Babcock-Davis, [www.babcockdavis.com](http://www.babcockdavis.com).
  - 1. Provide Basis-of-Design product or comparable product approved during the bid process. Characteristics that comparable products must match include, but are not limited to, color, form, aesthetic, and performance.

**2.2 Products**

- A. Corner Guards
  - 1. Stainless Steel Corner Guards, surface mounted, fabricated from one-piece, formed metal with formed edge, 90 degree or to match wall.
    - a. Material: Type 304 Stainless Steel, 16 Gauge with rounded edges, Satin No. 4 finish
    - b. Wing Size: 2 inch.
    - c. Corner Radius: 1/8 inch.
    - d. Mounting: Adhesive.

**PART 3 EXECUTION**

**3.1 INSTALLATION**

- A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to supporting construction.
- B. Position corner guard 4 inches (102 mm) above finished floor to 72 inches high minimum above finished floor, except at partial height walls..

**END OF SECTION**

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**SECTION 10 26 41**  
**BALLISTICS RESISTANT PANELS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Laminated fiberglass ballistics-resistant panels.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Wood framing to receive ballistics-resistant panels.
- B. Section 08 11 13 – Hollow Metal Doors and Frames: Bullet Resistant Door Frames.
- C. Section 08 14 16 – Flush Wood Door: Bullet resistant doors.
- B. Section 09 21 16 - Gypsum Board Assemblies: Metal framing to receive ballistics-resistant panels.

**1.3 REFERENCE STANDARDS**

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- B. NIJ 0108.01 - Standard for Ballistic Resistant Protective Materials; 1985.
- C. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition, Including All Revisions.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements for submittal procedures.
- B. Product Data: Manufacturer's current data sheets on each product to be used.
- C. Shop Drawings: Details of installation of ballistics-resistant panels, including plan views, elevations, sections, and details of the proposed installation with attachment methods.
- D. Samples: Submit two samples, minimum size 6 inches by 6 inches (150 mm by 150 mm), for each product specified.
- E. Certificates: Submit printed data to indicate compliance with following requirements.
  - 1. UL Listing verification and UL 752 Current Test Results as provided by Underwriters Laboratories.
- F. Manufacturer's Instructions: Indicate preparation and installation.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver and store products in manufacturer's unopened packaging bearing the brand name, manufacturer's identification, and required UL and NIJ certification labels until ready for installation.
- B. Handle material with care to prevent damage. Stack panels flat, store inside under cover off the ground in a dry location, and protect from other construction activities.

**1.6 FIELD CONDITIONS**

- A. Install products under environmental conditions (temperature, humidity, and ventilation) recommended by manufacturer.

**PART 2 PRODUCTS**

**2.1 LAMINATED FIBER BALLISTICS-RESISTANT PANELS**

- A. General:
  - 1. Laminated fiber ballistics-resistant panels to be non-ricochet type. When struck by a bullet or projectile, the panels to delaminate in such a way that absorbs the energy, stops the projectile, and prevents ricochet or spalling.
  - 2. Ballistics Resistance of Joints: Equal to that of the panel.
- B. Performance Requirements:
  - 1. Ballistics Resistance Rating: Listed and labeled as tested in accordance with UL 752 Level 3 (super-power handgun) threat rating.

2. Panel thickness: ½" or minimum thickness as required for Level 3 threat rating.
3. Panel Size: Maximum size to limit number of seams.
4. Attachment: Mechanical fasteners.

### **PART 3 EXECUTION**

#### **3.1 INSTALLATION**

- A. Install panels in accordance with manufacturer's instructions and shop drawings and in proper relationship with adjacent construction.
  1. Maintain ballistics-resistive rating at panel junctures with concrete floor and roof slabs, bullet-resistive door and window frames, and required penetrations.
- B. Reinforce panel joints with a minimum 4 inch (102 mm) wide back-up layer of ballistics-resistant material, centered on panel joints.
- C. Secure panels using screws, bolts, or industrial adhesive.

#### **3.2 PROTECTION**

- A. Protect installed panels from subsequent construction operations.

**END OF SECTION**

**SECTION 10 28 00**  
**TOILET, BATH, AND LAUNDRY ACCESSORIES**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Owner Furnished Contractor Installed (OFICI) and Contractor Furnished Contractor Installed (CFCI) Commercial restroom and locker room accessories.
- B. Shower curtain, track and guides.
- E. Utility room accessories.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Concealed wood blocking, nailers, and supports.
- B. Section 09 30 00 - Tiling: Ceramic washroom accessories.
- C. Section 10 21 13.19 - Plastic Toilet Compartments.
- D. Section 22 40 00 - Plumbing Fixtures: Under-lavatory pipe and supply covers.

**1.3 REFERENCE STANDARDS**

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- C. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2015a (Reapproved 2019).
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.
- E. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- F. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2017.
- G. ASTM C1036 - Standard Specification for Flat Glass; 2016.
- H. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.
- I. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2018.
- J. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's data sheets for each product specified, including the following:
  - 1. Installation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Cleaning and maintenance instructions.
  - 4. Replacement parts information.
- C. Schedule: Submit a toilet accessory schedule, indicating the type and quantity to be installed in each washroom. Use room numbers as indicated on the Drawings.

**PART 2 PRODUCTS**

**2.1 MATERIALS**

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
  - 1. Grind welded joints smooth.

- 2. Fabricate units made of metal sheet of seamless sheets with flat surfaces.
- B. Keys: Provide four (4) keys for each accessory to Owner; master key lockable accessories.
- C. Stainless Steel Sheet: ASTM A666, Type 304.
- D. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.
- E. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.
- F. Mirror Glass: Tempered safety glass, ASTM C1048; and ASTM C1036 Type I, Class 1, Quality Q2, with silvering as required.
- G. Adhesive: Two component epoxy type, waterproof.
- H. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.
- I. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

## 2.2 FINISHES

- A. Stainless Steel: Satin finish, unless otherwise noted.
- B. Powder-Coated Steel: Clean, degrease, and neutralize. Follow immediately with a phosphatizing treatment, prime coat, and two finish coats of powder coat enamel.
- C. Galvanizing for Items Other than Sheet: Comply with ASTM A123/A123M; galvanize ferrous metal and fastening devices.
- D. Shop Primed Ferrous Metals: Pretreat and clean, spray apply one coat primer and bake.
- E. Back paint components where contact is made with building finishes to prevent electrolysis.

## 2.3 COMMERCIAL TOILET ROOM ACCESSORIES

- A. Toilet Paper Dispensers: Owner Furnished Contractor Installed (OFCI), surface mounted, at each water closet as indicated on the drawings.
- B. Paper Towel Dispensers: OFCI, surface mounted, locations as indicated on the drawings.
- C. Soap Dispensers: OFCI, surface mounted, locations as indicated on the drawings.
- D. Waste Receptacles: Contractor Furnished Contractor Installed (CFCI), semi recessed waste receptacles, locations as indicated on the drawings.
  - 1. Basis-of-Design: Bobrick Washroom Equipment, Inc.: [www.bobrick.com](http://www.bobrick.com).
    - a. Bobrick B-3644 Classic Series, 12 gallon capacity, satin-finish stainless steel.
    - b. Accessories: 3944-134 LinerMate.
- E. Sanitary Napkin Disposal Unit: Contractor Furnished Contractor Installed (CFCI), stainless steel, surface-mounted, locations as indicated on the drawings.
  - 1. Basis of Design: Bobrick Washroom Equipment, Inc.: [www.bobrick.com](http://www.bobrick.com).
    - a. Bobrick ClassicSeries Model B-254.
    - b. Waste Receptacle: Removable, leak-proof, rigid molded polyethylene.
    - c. Capacity: 1.2 gallons (4.6 L).
- F. Mirrors: Contractor Furnished Contractor Installed (CFCI), stainless steel Channel Frame Mirrors, locations and sizes as indicated on the drawings.
  - 1. Basis of Design: Bobrick Washroom Equipment, Inc.: [www.bobrick.com](http://www.bobrick.com).
    - a. Channel Frame: One-piece, Type 430 stainless steel channel-frame, 1/2 inch x 1/2 inch x 3/8 inch (13mm x 13mm x 9.5mm), with 90 degree mitered corners; bright polished finish on exposed surfaces.
    - b. Mirror: No. 1 quality, 1/4 inch (6mm) float glass, guaranteed for 15 years against silver spoilage.
    - c. Corners: Protected by friction-absorbing filler strips.
    - d. Back of Mirror: Protected by full-size, shock absorbing, water-resistant, nonabrasive, 3/16 inch (5mm) thick polyethylene padding.
    - e. Mounting: Removable; galvanized steel back with integral horizontal hanging brackets located at top and bottom for mounting on concealed rectangular wall hanger; locking devices secure mirror to concealed wall hanger.

- f. Wall Hanger: Concealed, 20 gauge (0.9mm) galvanized steel; incorporates lower support member to engage lower back plate louvers to keep bottom of mirror against wall.
  - g. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
- F. Grab Bars: Contractor Furnished Contractor Installed (CFCI), stainless steel, smooth surface, wall mounted, locations and sizes as indicated on the drawings..
- 1. Basis of Design: Bobrick Washroom Equipment, Inc.: [www.bobrick.com](http://www.bobrick.com).
    - a. Grab Bar Materials: 18-8, Type 304, 18 gauge (1.2mm) stainless steel tubing with satin finish, heliarc welded construction, outside diameter 1-1/4 inches (32mm).
    - b. Compliance: ICC/ANSI A117.1 Accessibility Standards. Capacity: Designed to support 250 lbs (113 kg) in compliant installations.

## 2.4 COMMERCIAL SHOWER ACCESSORIES

- A. Folding Shower Seat: Contractor Furnished Contractor Installed (CFCI), wall-mounted surface; welded tubular seat frame, structural support members, swing-down legs, hinges, and mechanical fasteners of Type 304 stainless steel, L-shaped, right hand seat.
- 1. Basis of Design: Bobrick Washroom Equipment, Inc.: [www.bobrick.com](http://www.bobrick.com).
    - a. Seat: Phenolic or polymeric composite one-piece seat or seat slats, color as selected by the Architect.
    - b. Size: ADA Standards compliant, locations as indicated on the drawings.
- B. Soap Dish: Contractor Furnished Contractor Installed (CFCI), surface mounted, locations as indicated on the drawings, minimum one per shower.
- 1. Basis of Design: Bobrick Washroom Equipment, Inc.: [www.bobrick.com](http://www.bobrick.com).
    - a. Bobrick Model B-6807.
    - b. Finish: Satin stainless steel.
- C. Robe Hook: Contractor Furnished Contractor Installed (CFCI), heavy-duty stainless steel, single-prong, rectangular-shaped bracket and backplate for concealed attachment, satin finish, locations as indicated on the drawings, minimum two at each shower, and one each at Public RR 103, Mens RR 123 and Womens RR 124.
- 1. Basis of Design: Richelieu 51128170, Richelieu Hardware, [www.richelieu.com](http://www.richelieu.com).
- D. Shower Curtain Track: Contractor Furnished Contractor Installed (CFCI)
- Basis of Design: Basis of Design: Clickeze, InPro Corp., PO Box 406 Muskego, WI 53150 USA, [www.inprocorp.com](http://www.inprocorp.com).
- 1. Description: OPTITRAC, extruded aluminum cubicle track with clear anodized aluminum finish. Aluminum shall be 6063-T5. Dimensions: height 3/4" (19.05mm), width 1-3/8" (34.93mm).
  - 2. End Cap: Provide thermoplastic end caps in anodized color matching the track.
  - 3. Nylon rollers, size and type compatible with track; designed to eliminate bind when curtain is pulled; fitted to curtain to prevent accidental curtain removal.
- E. Shower Curtain: Contractor Furnished Contractor Installed (CFCI).
- Basis of Design: Clickeze, InPro Corp., PO Box 406 Muskego, WI 53150 USA, [www.inprocorp.com](http://www.inprocorp.com).
- 1. Description: ADA shower curtain, heavy duty, 13 gauge, flame retardant, antimicrobial vinyl that is water repellant, wear resistant, scrubbable and colorfast.
  - 2. Finish and color: Select solid or patterned opaque material or light transmitting vinyl from manufacturer's standard selection.
  - 3. Fabrication:
    - a. Width: Manufacture ADA Shower Curtain of one piece, sized in width to the next increment of 6".
    - b. Height: Height to be from bottom of curtain hooks or rings to the floor.
    - c. Heading: Include 4-ounce nickel-plated grommets, 3-1/2" from each end and 6" on center for carriers. ADA Shower Curtain top hem to be triple-turned hem over nylon tape for rugged wear.
    - d. Water Dam: Provide 3" mitered corner to achieve 3" dam.
    - e. Seams: ADA Shower Curtain is to be seamless with sanitary "no scum" side and bottom edges. Sewing thread to be triple ply twisted nylon.
    - f. Velcro: Provide 4" x 3" side sealing Velcro. Each side of curtain shall have three rectangles of loop Velcro sewn 1" below top hem, 2" above weight pocket and 36" above the bottom of curtain.
    - g. Weights: Provide curtains with 1-1/4" weight tape sewn into bottom hem. Weights per yard - 22.
  - 4. Curtain Fabrication:

- a. Width of curtain to be 10 percent wider than track length.
  - b. Length of curtain to end 10 inches (254 mm) above finished floor.
  - c. Curtain Heading: Web reinforced band of open mesh cloth with metal grommet holes for carriers spaced 6 inches (150 mm) on center.
  - d. Seams and Hems: Manufacturer's standard fabrication method for securely sewn and finished seams and hems.
- F. Grab Bars: Contractor Furnished Contractor Installed (CFCI), stainless steel, smooth surface, wall mounted, locations and sizes as indicated on the drawings..
- 1. Basis of Design: Bobrick Washroom Equipment, Inc.: [www.bobrick.com](http://www.bobrick.com).
    - a. Grab Bar Materials: 18-8, Type 304, 18 gauge (1.2mm) stainless steel tubing with satin finish, heliarc welded construction, outside diameter 1-1/4 inches (32mm).
    - b. Compliance: ICC/ANSI A117.1 Accessibility Standards. Capacity: Designed to support 250 lbs (113 kg) in compliant installations.

**2.5 HEALTHCARE ACCESSORIES**

- A. Hand Sanitizer Dispenser: OFCI, wall mounted dispensers, locations as directed by Owner.

**2.7 UTILITY ROOM ACCESSORIES**

- A. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch (1.3 mm) thick stainless steel, Type 304, with 1/2 inch (12 mm) returned edges, 0.06 inch (1.6 mm) steel wall brackets.
  - 1. Hooks: Two, 0.06 inch (1.6 mm) stainless steel rag hooks at shelf front.
  - 2. Mop/broom holders: Four spring-loaded rubber cam holders at shelf front.
  - 3. Length: 48 inches (\_\_\_ mm).
  - 4. Products:
    - a. \_\_\_\_\_.

**PART 3 EXECUTION**

**3.1 INSTALLATION**

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
  - 1. Grab Bars: As indicated on drawings.
  - 2. Other Accessories: As indicated on drawings.

**3.2 PROTECTION**

- A. Protect installed accessories from damage due to subsequent construction operations.

**END OF SECTION**



**SECTION 10 44 00**  
**FIRE PROTECTION SPECIALTIES**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Fire extinguishers.
- B. Fire extinguisher cabinets.
- C. Accessories.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.
- B. Section 09 91 23 - Interior Painting: Field paint finish.

**1.3 REFERENCE STANDARDS**

- A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a (Reapproved 2017).
- B. FM (AG) - FM Approval Guide; current edition.
- C. NFPA 10 - Standard for Portable Fire Extinguishers; 2017, with Errata (2018).
- D. UL (DIR) - Online Certifications Directory; Current Edition.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide extinguisher operational features.
- C. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

**1.5 FIELD CONDITIONS**

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

**PART 2 PRODUCTS**

**2.1 FIRE EXTINGUISHERS**

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
- B. Dry Chemical Type Fire Extinguishers: Stainless steel tank, with pressure gage.
  - 1. ABC Dry Chemical Portable Fire Extinguisher
  - 2. Finish: Baked enamel, color as selected.
  - 3. Provide wall mounting brackets for those located in mechanical rooms not requiring cabinet.

**2.2 FIRE EXTINGUISHER CABINETS**

- A. Basis-of-Design: Architectural Series, Model No. AL-2409-5R, as manufactured by Larsen's Manufacturing Co., [www.larsensmfg.com](http://www.larsensmfg.com).
  - 1. Semi-Recessed Trim Type: Square.
  - 2. Door Style: Vertical Duo with clear acrylic window.
  - 3. Color: Clear anodized aluminum.
  - 4. Fire Rating: None.

**2.4 ACCESSORIES**

- A. Extinguisher Brackets: Formed steel, chrome-plated.

- C. Lettering: "FIRE EXTINGUISHER" decal, or vinyl self-adhering, pre-spaced black lettering in accordance with authorities having jurisdiction (AHJ).

### **PART 3 EXECUTION**

#### **3.1 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install cabinets plumb and level in wall openings, from finished floor height as indicated on the drawings.
- C. Secure rigidly in place.
- D. Place extinguishers in cabinets.

**END OF SECTION**

**SECTION 10 51 13**  
**METAL LOCKERS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Personal storage lockers with built-in bench drawers and interior accessories.
- B. Secured weapons storage locker unit.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Wood base construction.
- B. Section 06 10 00 - Rough Carpentry: Wood blocking and nailers.
- C. Section 06 20 00 - Finish Carpentry: Bench tops for locker bench support brackets.
- D. Section 26

**1.3 REFERENCE STANDARDS**

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's product literature and installation instructions for each type of welded metal locker required. Include data substantiating that products to be furnished comply with requirements of the contract documents.
- C. Shop Drawings:
  - 1. Show fabrication, assembly, and installation details, including descriptions of procedures and diagrams.
  - 2. Show complete locker installation layout, including quantities, locations and types of accessory units required. Include notations and descriptions of all installation items and components.
  - 3. Show installation details at non-standard conditions, if any.
  - 4. Provide layout, dimensions, and identification of each unit, corresponding to sequence of installation procedures.
  - 5. Provide installation schedule and procedures to ensure proper installation.
- D. Samples: Provide minimum [3] inches or [76] millimeters square example of each color and texture on actual substrate for each component to remain exposed after installation.
- E. Maintenance Data: Provide written documentation of the manufacturer's statement, claiming the maintenance free nature of the product.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Follow manufacturer's instructions and recommendations for delivery, storage and handling requirements.

**1.6 PROJECT CONDITIONS**

- A. Field Measurements: Verify quantities of welded metal locker units before fabrication. Indicate verified measurements on shop drawings. Coordinate fabrication and delivery to ensure no delay in progress of the work.
- B. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating welded metal lockers units without field measurements. Coordinate construction to ensure actual dimensions correspond to established dimensions.
- C. Pre-installation Conference: Schedule and conduct conference on project site between installer and contractor to review methods and procedures for installing welded Metal Lockers.

## **PART 2 PRODUCTS**

### **2.1 METAL LOCKERS**

- A. Basis of Design: FreeStyle™ Personal Storage Lockers manufactured by Spacesaver Corporation; [www.spacesaver.com/products/locker-storage/freestyle-personal-storage-locker/](http://www.spacesaver.com/products/locker-storage/freestyle-personal-storage-locker/).
- B. Type: Personal storage lockers with built-in bench drawers with intermediate base shelf with interlocking mechanism for securing drawer when locker door is closed
- B. All lockers to be equipped with modular electrical system as required.
- C. Materials and Features:
  - 1. Provide materials and quality of workmanship, which meets or exceeds established industry standards for products specified. Use furniture grade sheet metal, solid hardwood benches and fasteners for component fabrication.
  - 2. Lockers to be flat-top, to fit under wood-framed and drywalled bulkhead above as constructed by General Contractor.
  - 3. Fabricated Metal Components and Assemblies: All components to be painted with an electro-statically applied Powder Coat paint that can meet or exceed test requirements set out by ASTM standard D3451-06 Standard Guide for Testing Coating Powders and Powder Coatings.
  - 4. Where ends or sides are exposed, provide flush panel closures.
  - 5. Color: elected by Architect from manufacturer's standard colors.
- D. Electrical:
  - 1. UL listed manufactured electrical wiring system with plug-in-play component design.
  - 2. Receptacles – standard 20 amp duplex receptacles and 20 amp GFCI duplex receptacles
- E. Built-in Bench Drawer:
  - 1. Provide manufacturer's standard built-in bench drawer with nominal 36 inch depth.
  - 2. Provide interlock system for securing drawer when main locker doors are closed and provide access only when main locker door/s is opened.
  - 3. Minimum bench drawer 26.5 inch drawer extension.
  - 4. Provide a flush mounted pull handle.
  - 5. Drawer Slides: Provide 200 lbs maximum load capacity and pass 50,000 cycle performance testing.
- F. Bench Seat:
  - 1. Laminated kiln dried maple bench seat, 13.0 inch deep; 1.25 inches thick.
  - 2. Front (leading edge) of bench seat to have 0.625 inch radius bull nose.
  - 3. Finish shall be sanded smooth and have two (2) coats of catalyzed varnish applied.
- G. Locker Doors:
  - 1. Doors to be welded from two (2) pieces of minimum 18-gauge cold rolled steel box formed and welded together using modern GMAW techniques. Single-piece door with inner and outer door panels shall have a combined steel thickness of no less than 0.096 inches thick. Welded door design with inner panel optimizes structural integrity of locker door system over and above any single frame door design.
  - 2. Exterior door panel shall be constructed with formed flanges and return flanges to add stiffness.
  - 3. Inner door panel shall be constructed with formed flanges for added stiffness, and 70% of external door panel height.
  - 4. Provide standard louvered air vents for natural ventilation.
  - 5. Provide louvered air vents in drawer front when built-in bench drawer for natural ventilation.
  - 6. All doors shall have neoprene silencers on each door for noise reduction.
  - 7. Hinge: 16-gauge full length hinge spot welded to door frame at 6 inch intervals.
  - 8. Locking Mechanism: Provide hasp for padlock by Owner.
  - 9. Locker Tag Numbers: Provide locker numbers on each locker per customer requirement.
- H. Interior Accessories:
  - 1. All interior components to be constructed of minimum 18-gauge steel and secured utilizing blind rivets, threaded fasteners, or bending specially designed tab.
  - 2. Provide per each locker:
    - a. Two (2) full-width heavy-duty shelves.
    - b. One (1) hanger-bar assembly kit.
    - c. One (1) Inside body armor drying rack.

## **2.2 SECURED WEAPONS STORAGE CABINETS**

- A. Basis of Design: Free standing Secured Weapons Storage Cabinet, model number UWRC4284 as manufactured by Spacesaver Corporation; [www.spacesaver.com/products/weapons-storage/floor-mounted-gun-lockers/](http://www.spacesaver.com/products/weapons-storage/floor-mounted-gun-lockers/)
- B. Type: Secured weapons storage cabinet to be installed floor mounted with anti-tipping wall attachment.
- C. Description: Cabinet shall be a one-piece assembly with outside nominal dimensions of 42 inches wide by 84 inches high by 16.25" deep.
  - 1. Cabinet Construction: 18-gauge double-walled upright posts welded to 18-gauge flat plate steel sidewalls and back walls with diamond mesh perforations.
  - 2. Top and bottom covers shall be made of 16-gauge steel welded to the upright posts.
  - 3. Cabinet doors shall be heavy-duty 18-gauge, folding and fully retractable in the open position. The cabinet doors shall also include a diamond mesh perforation for visibility as well as rotating locking bars for security.
  - 4. Locking bars shall lock at a single common point.
  - 5. Base:: 16-gauge steel with standard universal stock cups.
  - 6. Finish: shall be factory applied electrostatic powder coat paint, selected by Architect from manufacturer's standard colors..
- D. Weapons Rack Support: Provide manufacturer's standard support rails, back panel kit with individual stock and barrel supports

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- A. Install following manufacturer's written instructions for installation of each type of locker and accessory item specified.
- B. Remove any components that are chipped, scratched, or otherwise damaged and which do not match adjoining work. Replace with new matching units, installed as specified and in manner to eliminate evidence of replacement.
- C. Verify accessory unit alignment and plumb after installation. Correct if required, following manufacturer's instructions.
- D. Adjust all accessories to provide smoothly operating, visually acceptable installation.
- E. Schedule and conduct user demonstration maintenance training with Owner's maintenance personnel. Training session should include lecture and demonstration of all maintenance and repair procedures that end-user personnel would normally perform.

### **3.2 CLEANING**

- A. Clean locker interiors and exterior surfaces.

**END OF SECTION**

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**SECTION 10 75 00**  
**FLAGPOLES**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Aluminum or Steel Flagpole.

**1.2 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete base and foundation construction.

**1.3 REFERENCE STANDARDS**

- A. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- C. NAAMM FP 1001 - Guide Specifications for Design Loads of Metal Flagpoles; 2007.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide data on pole, accessories, and configurations.
- C. Shop Drawings: Indicate detailed dimensions, base details, anchor requirements, and imposed loads.
- D. Maintenance Data: Provide lubrication and periodic maintenance requirement schedules.

**PART 2 PRODUCTS**

**2.1 FLAGPOLES**

- A. Flagpole: Designed in accordance with NAAMM FP 1001.
  - 1. Material: Aluminum or Steel.
  - 2. Design: Straight shaft.
  - 3. Mounting: Ground mounted type.
  - 4. Nominal Height: 25 ft, measured from nominal ground elevation.
  - 5. Halyard: Interior type, electric operation.

**2.2 POLE MATERIALS**

- A. Aluminum: ASTM B241/B241M, 6063 alloy, T6 temper.
- B. Steel: ASTM A53/A53M, Type S, Grade B.

**2.3 ACCESSORIES**

- A. Finial Ball: Stainless steel, 6 inch (150 mm) diameter.
- B. Flag design, 5 ft by 8 ft (1.5 m by 2.4 m) size, nylon fabric, brass grommets, hemmed edges.
- C. Cleats: 9 inch (230 mm) size, aluminum with galvanized steel fastenings, two per halyard.
- D. Cleat Box: Aluminum, with built-in hinge and hasp assembly, attached to pole with tamper proof screws inside box.
- E. Halyard: 5/16 inch (8 mm) diameter stainless steel aircraft cable.
- F. Connecting Sleeve For Multiple Section Poles: Same material as pole, precision fit for field assembly of pole, concealed fasteners.

**2.4 OPERATORS**

- A. Hand Crank: Removable.

## **2.5 FINISHING**

- A. Aluminum: Clear Anodized.
- B. Steel:
  - 1. Metal surfaces in contact with concrete: Asphaltic paint.
  - 2. Concealed Steel Surfaces: Galvanized to ASTM A123/A123M requirements.
  - 3. Exposed to View Steel Surfaces: Galvanized to ASTM A123/A123M requirements.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- A. Install flagpole, base assembly, and fittings in accordance with manufacturer's instructions.
- B. Electrically ground flagpole installation.
- C. Set brackets for wall set flagpoles anchored securely into wall construction. Seal watertight.
- D. Coordinate installation of conduit and boxes from disconnect to control unit and control unit to motor operating device.

### **3.2 ADJUSTING**

- A. Adjust operating devices so that halyard and flag function smoothly.

**END OF SECTION**



**SECTION 11 30 13  
RESIDENTIAL APPLIANCES**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Owner Furnished Contractor Installed (OFCI) Kitchen and Laundry Appliances.
- B. Contractor Furnished Contractor Installed (CFCI) Kitchen Appliances.
- C. Owner Furnished Owner Installed (OFOI) Kitchen Appliances.

**1.2 RELATED REQUIREMENTS**

- A. Section 22 11 16 – Domestic Water Piping: Plumbing connections for appliances.
- B. Section 22 13 16 – Sanitary Waste and Vent Piping: Plumbing connections for appliances.
- C. Section 22 15 16 – Facility Natural Gas and Compressed Air Piping: Plumbing connections for appliances.
- D. Section 22 40 00 – Plumbing Fixtures: Contractor furnished contractor installed Garbage Disposal.
- E. Section 23 38 13 – Commercial Kitchen Exhaust Equipment: Contractor furnished contractor installed Exhaust Hood.
- F. Section 26 27 26 - Wiring Devices: Electrical connections for appliances.

**1.3 REFERENCE STANDARDS**

- A. UL (DIR) - Online Certifications Directory; Current Edition.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.

**PART 2 PRODUCTS**

**2.1 OFCI - WORK ROOM 120 – RESIDENTIAL APPLIANCES**

- A. Refrigerator:
  - 1. Type: Free-standing, side-by-side, frost-free. 36" wide, connected to domestic water for ice maker.

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- B. Oven/Range:
  - 1. Type: Gas, free-standing, 30" wide, adjustable height to 34" high, with front controls for ADA requirements. Exhaust hood is specified in Mechanical Drawings.

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- C. Dishwasher:
  - 1. Type: 24" wide, adjustable height to fit under 34" high ADA required countertop.

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**2.2 OFCI - CORRIDOR 06 - LAUNDRY APPLIANCES**

- A. Clothes Washer and Dryer: Existing clothes washer and dryer moved from current SE Precinct.

**2.3 OFOI - EXERCISE 04 – KITCHEN APPLIANCES**

- A. Refrigerator: Existing refrigerator moved from current SE Precinct.
- B. Contractor to connect to domestic water line.

**2.4 CFCI - WORK ROOM 120 – RESIDENTIAL APPLIANCES**

- A. Garbage Disposal - Refer to Mechanical Drawings
- B. Range Hood - Refer to Mechanical Drawings

**2.5 OFOI – WORKROOM 120 – KITCHEN APPLIANCES**

- A. Microwave Oven – free-standing countertop type.

**PART 3 EXECUTION**

**3.1 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.

**3.2 ADJUSTING**

- A. Adjust equipment to provide efficient operation.

**3.3 CLEANING**

- A. Remove packing materials from equipment and properly discard.
- B. Wash and clean equipment.

**END OF SECTION**

**SECTION 12 24 00**  
**WINDOW SHADES**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Interior manual roller shades.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Concealed wood blocking for attachment of headrail brackets.
- B. Section 09 21 16 - Gypsum Board Assemblies.
- C. Section 09 91 23 - Interior Painting.

**1.3 REFERENCE STANDARDS**

- A. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.
- B. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2019.
- C. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.
- D. WCMA A100.1 - Safety of Window Covering Products; 2018.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets, including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories.
- C. Shop Drawings: Include shade schedule indicating size, location and keys to details, head, jamb and sill details, mounting dimension requirements for each product and condition, and operation direction.
- D. Certificates: Manufacturer's documentation that line voltage components are UL listed or UL recognized.
- E. Source Quality Control Submittals: Provide test reports indicating compliance with specified fabric properties.
- F. Selection Samples: Include fabric samples in full range of available colors and patterns.
- G. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- H. Operation and Maintenance Data: List of all components with part numbers, sources of supply, and operation and maintenance instructions; include copy of shop drawings.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver shades in manufacturer's unopened packaging, labeled to identify each shade for each opening.
- B. Handle and store shades in accordance with manufacturer's recommendations.

**1.6 FIELD CONDITIONS**

- A. Do not install products under environmental conditions outside manufacturer's absolute limits.

**PART 2 PRODUCTS**

**2.1 Manufacturers**

- A. Interior Manually Operated Roller Shades:
  - 1. Draper, Inc; Clutch Operated FlexShade: [www.draperinc.com/#sle](http://www.draperinc.com/#sle).
  - 2. Hunter Douglas Architectural; RB500 Manual Roller Shades: [www.hunterdouglasarchitectural.com/#sle](http://www.hunterdouglasarchitectural.com/#sle).
  - 3. Lutron Electronics Co., Inc; Contract Roller Manual Roller Shades: [www.lutron.com/#sle](http://www.lutron.com/#sle).
  - 4. MechoShade Systems LLC; Mecho/5 System: [www.mechoshade.com/#sle](http://www.mechoshade.com/#sle).
- B. Source Limitations: Furnish products produced by a single manufacturer and obtained from a single supplier.

## **2.2 Roller Shades**

- A. General:
  - 1. Provide shade system components that are easy to remove or adjust without removal of mounted shade brackets.
  - 2. Provide shade system that operates smoothly when shades are raised or lowered.

## **2.3 Shade FABRIC**

- A. Fabric for Light-Filtering Shades: Nonflammable, color-fast, impervious to heat and moisture, and able to retain its shape under normal operation.
  - 1. Material: Vinyl coated polyester.
  - 2. Material Certificates and Product Disclosures:
  - 3. Performance Requirements:
    - a. Flammability: Pass NFPA 701 large and small tests.
    - b. Fungal Resistance: No growth when tested according to ASTM G21.
  - 4. Color: Charcoal Gray.
  - 5. Openness Factor: 5%.
  - 6. Visible Light Transmittance (TV): 6.

## **2.4 Roller Shade FABRICATION**

- A. Field measure finished openings prior to ordering or fabrication.
- B. Dimensional Tolerances: Fabricate shades to fit openings within specified tolerances.
  - 1. Vertical Dimensions: Fill openings from head to sill with 1/2 inch (13 mm) space between bottom bar and window sill.

## **PART 3 EXECUTION**

### **3.1 PREPARATION**

- A. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.
- B. Coordinate with window installation and placement of concealed blocking to support shades.

### **3.2 INSTALLATION**

- A. Install in accordance with manufacturer's instructions and approved shop drawings, using mounting devices as indicated.
- B. Adjust level, projection, and shade centering from mounting bracket. Verify there is no telescoping of shade fabric. Ensure smooth shade operation.

### **3.3 CLEANING**

- A. Clean soiled shades and exposed components as recommended by manufacturer.
- B. Replace shades that cannot be cleaned to "like new" condition.

### **3.4 PROTECTION**

- A. Protect installed products from subsequent construction operations.

**END OF SECTION**

**SECTION 12 93 00**  
**SITE FURNISHINGS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Bike Rack

**1.2 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete base and foundation construction.

**1.3 REFERENCES STANDARDS**

- A. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Indicate detailed dimensions, base attachment details, and anchor requirements.
- C. Product Data: Provide data on furnishing, equipment, accessories, and configurations.
- D. Submit product information and manufacturer's installation recommendations for all site furnishings.

**1.5 PRODUCT HANDLING AND STORAGE**

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Protect all furnishings, equipment, and accessories from damage or moisture.
- C. Replacements: In the event of damage to the site furnishings, immediately make all repairs or replacements necessary to the approval of the Owner and at all no additional cost to the Owner.

**PART 2 PRODUCTS**

**2.1 BIKE RACK**

- A. Manufacturer: Madrax  
1080 Uniek Drive  
Waunakee, WI 53597  
608-849-1080
- B. Model No: UX200-SF-ES. Bronze color.
- C. Or approved equal.

**PART 3 EXECUTION**

**3.1 INSTALLATION**

- A. Install site furnishings as indicated on the Drawings.
- B. Install flagpole, base assembly, and fittings in accordance with manufacturer's instructions.

**3.2 EXAMINATION**

- A. Verify site is ready to receive work and dimensions are as indicated on shop drawings and as required by manufacturer.
- B. Owner and Landscape Architect reserves the right to make minor field adjustments to best fit the exact field conditions.

**END OF SECTION**

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**SECTION 14 27 13**  
**ELEVATOR CAB REFURBISHMENT**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. The work of this section includes the replacement of interior elevator finish system.
- B. New card reader controlled operating call buttons at upper level described in other sections.
- B. Code required hoistway access, lighting and sprinklering as described in other specifications sections

**1.2 RELATED REQUIREMENTS**

- A. Section 09 68 13 - Tile Carpeting: Floor finish in cab.
- B. 26 05 00 – Common Work Results for Electrical
- C. 28 50 00 – Access Control System

**1.3 REFERENCE STANDARDS**

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASME A17.2 - Guide for Inspection of Elevators, Escalators, and Moving Walks; 2017.
- C. ASME A17.5- Elevator and Escalator Electrical Equipment.
- D. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- E. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- F. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- G. NFPA 101 - Life Safety Code.

**1.4 SUBMITTALS**

- A. See Section 01 00 00 - General Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's printed product data for each type elevator cab refurbishment system specified.
- C. Shop Drawings: Include appropriate plans, elevations, sections, diagrams, and details on following items:
  - 1. Scaled or Fully Dimensioned Layout of new panels, finishes and fixtures.
  - 2. Interface with building security system.
- D. Samples: Verification samples, 6" square, of each type and color indicated.
- E. Manufacturer's Installation Instruction: Printed installation instructions new cab refurbishments systems.
- F. Operation and Maintenance Data.
  - 1. Parts catalog with complete list of equipment replacement parts; identify each entry with equipment description and identifying code.
- G. Submittal review shall not be construed as an indication that submittal is correct or suitable, or that the work represented by submittal complies with the Contract Documents. Compliance with Contract Documents, code requirements, dimensions, fit, and interface with other work is Contractor's responsibility.

**1.6 PERMIT, TEST AND INSPECTION**

- A. Obtain and pay for permit, license, and inspection fee necessary to complete installation.
- B. Perform test required by governing authority in accordance with procedure described in ASME A17.2 Guide for Inspection of Elevators, Escalators, and Moving Walks in the presence of Authorized Representative.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURER**

- A. Basis-of-Design: Ascend™ Zenith Elevator Protection Systems, as manufactured by InPro Corporation; www.inprocorp.com.
- B. Requirements:
  - 1. Provide elevator interior finish system that shall include 9 vertical wall panels.
  - 2. Elevator interior finish system shall include: Stainless steel toe kick – 4.25” stainless steel reveals - ¾” stainless steel corners - 1¾” stainless steel friezes 4.0”.
  - 4. Ascend™ Elevator Cab Ceiling System.
    - a. Stainless Steel Island ceiling with 6 stainless steel panels and LED lamps. Battery backup is included.
    - b. LED Downlight Fixtures shall be 3000K, 4 watt LED output that produces 209 lumens per fixture.
    - c. LED Linear Perimeter Light shall be 3000k and emit (385 Lumens per ft. / 623 lumens per ft.) with adjustable brackets.
  - 5. Ascend™ stainless steel elevator cab handrails/wall guards, flat style , ¼” x 2”, on back wall only.
  - 6. Ascend™ elevator cab mounting clips - components shall be installed with a unique clip system that allows fasteners and seams to be hidden. Reveal strip shall cover fasteners and prevent tampering.

### **2.2 MATERIALS AND FINISHES**

- A. Stainless Steel Wall Panels shall be made from 18 gauge stainless steel factory bonded to particleboard. Particleboard shall have no added urea formaldehyde. Brushed #4 Satin finish , alloy 430.
- B. Stainless Steel: Stainless steel, toe kicks, reveals, and corners shall be fabricated from type 304 stainless ste.
- C. Handrail panels, friezes, and ceiling panels shall be fabricated from type 430 steel. Toe kick shall be 16-gauge stainless steel. Frieze and handrail panel shall be 18-gauge stainless steel.
- D. Stainless steel handrails shall be Type 304 stainless steel.
- E. Aluminum: Aluminum attachment clips shall be fabricated form 6063-T5 extruded aluminum with a mill finish.
- F. Steel – Black welded steel ceiling frames shall be 1/8” A36 Steel.
- G. LED Downlight Fixtures shall be die cast aluminum, powder-coat black.
- H. LED Linear Perimeter Lights shall be clear anodized aluminum.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- A. Install system components, and connect equipment to electrical service per manufacturer’s instructions and approved shop drawings.
- B. Install carpet as specified on Drawing Sheet A811.

### **3.2 CLEANING**

- A. Remove protective coverings from finished surfaces.
- B. Clean surfaces and components in accordance with manufacturers written instructions.

### **3.3 PROTECTION**

- A. Do not permit construction traffic within car after cleaning.
- B. Protect installed products until Date of Substantial Completion.
- C. Repair or replace damaged products and materials prior to Date of Substantial Completion.

**END OF SECTION**





