

# Project Manual

Introductory Information, Contracting Requirements, and Technical Specifications

## Johnson County Courthouse

### Project 1 - Floor Infill

### Project 2 - Temporary Courtroom

## 18.112

OWNER:

Johnson County  
417 South Clinton Street  
Iowa City, Iowa 52246

---

## PROJECT DOCUMENTS

September 8, 2021



**SECTION 00 0101 - PROJECT TITLE PAGE**

**PROJECT MANUAL FOR**

**JOHNSON COUNTY COURTHOUSE:  
PROJECT 1 – FLOOR INFILL  
PROJECT 2 - TEMPORARY COURTROOM**

**IOWA CITY, IA**

**ISSUE DATE: SEPTEMBER 8, 2021  
NM PROJECT NO: 18.112  
AN IOWA STATE TAX EXEMPT PROJECT**

**THIS PROJECT MANUAL INCLUDES**  
PROCUREMENT REQUIREMENTS  
CONTRACTING REQUIREMENTS  
TECHNICAL SPECIFICATIONS

**PREPARED BY**  
NEUMANN MONSON, INC.  
221 East College Street, Suite 303  
Iowa City, IA 52240

**END OF PROJECT TITLE PAGE**



**SECTION 00 0103 - PROJECT DIRECTORY**

**OWNER:**

JOHNSON COUNTY  
913 South Dubuque Street, Iowa City, IA 52240  
Phone: 319.688.5845  
Contact: Ray Forsythe  
rforsythe@johnsoncountyiowa.gov

**ARCHITECT:**

NEUMANN MONSON, INC.  
221 East College Street, Suite 303, Iowa City, IA 52240  
Phone: 319.248.4760  
Contact: Scott Palmberg, AIA, CDT, LEED AP  
spalmberg@neumannmonson.com

**MECHANICAL/ELECTRICAL/PLUMBING ENGINEER:**

MODUS  
118 East College Street, Suite 200, Iowa City, IA 52240  
Phone: 319.248.4600  
Contact: Trevor M. Conrad, PE  
tconrad@modus-eng.com

**END OF PROJECT DIRECTORY**

Neumann Monson Architects  
18.112

Johnson County Courthouse  
Iowa City, IA

**SECTION 00 0107 - SEALS PAGE**

---

---

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly Registered Architect under the laws of the State of Iowa.

Kim S. McDonald

Signature

Date

Registration expires: June 30, 2023 Iowa Reg. No. 05215

Divisions or Sections covered by this seal: Divisions 00 thru 12.

---

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly Licensed Professional Engineer under the laws of the State of Iowa.

Trevor M. Conrad

Signature

Date

License expires: December 31, 2022 Iowa Lic. No. 17602

Divisions or Sections covered by this seal: Divisions 23 thru 28.

---





## **TABLE OF CONTENTS**

### **DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS**

00 0101	PROJECT TITLE PAGE
00 0103	PROJECT DIRECTORY
00 0107	SEALS PAGE
00 0110	TABLE OF CONTENTS
00 1113	INVITATION FOR QUOTES
00 2113	INSTRUCTIONS TO QUOTE SUBMITTERS
00 4113.1	QUOTE FORM – PROJECT 1
00 4113.2	QUOTE FORM – PROJECT 2
00 4313	QUOTE BOND
00 5000	AGREEMENT
00 7000	GENERAL AND SUPPLEMENTARY CONDITIONS
00 7414	SPECIAL CONDITIONS

### **DIVISION 01 - GENERAL REQUIREMENTS**

01 1000	SUMMARY
01 2000	PRICE AND PAYMENT PROCEDURES
01 3000	ADMINISTRATIVE REQUIREMENTS
01 4000	QUALITY REQUIREMENTS
01 5000	TEMPORARY FACILITIES AND CONTROLS
01 6000	PRODUCT REQUIREMENTS
01 7300	EXECUTION REQUIREMENTS

### **DIVISION 02 - EXISTING CONDITIONS**

02 4100	SELECTIVE DEMOLITION
---------	----------------------

### **DIVISION 03 - CONCRETE**

03 3000	CAST-IN-PLACE CONCRETE
---------	------------------------

### **DIVISION 04 – MASONRY (NOT USED)**

### **DIVISION 05 – METALS (NOT USED)**

### **DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES**

06 1000	ROUGH CARPENTRY
06 4100	ARCHITECTURAL WOODWORK

### **DIVISION 07 - THERMAL AND MOISTURE PROTECTION (NOT USED)**

07 9200	JOINT SEALANTS
---------	----------------

### **DIVISION 08 – OPENINGS (NOT USED)**

### **DIVISION 09 - FINISHES**

09 2116	GYPSUM BOARD ASSEMBLIES
09 5100	ACOUSTICAL CEILINGS
09 6800	CARPETING

09 9000 INTERIOR PAINTING AND STAINING

**DIVISION 23 - HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)**

23 0050 BASIC HVAC REQUIREMENTS

**DIVISION 26 - ELECTRICAL**

26 0050 BASIC ELECTRICAL REQUIREMENTS

26 0090 MINOR ELECTRICAL DEMOLITION FOR REMODELING

26 0519 ELECTRICAL POWER CONDUCTORS AND CABLES

26 0526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

26 0529 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

26 0533 RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

26 0553 IDENTIFICATION FOR ELECTRICAL SYSTEMS

26 2726 WIRING DEVICES

**DIVISION 27 - COMMUNICATIONS**

27 0050 BASIC COMMUNICATIONS REQUIREMENTS

27 0090 MINOR COMMUNICATION DEMOLITION FOR REMODELING

27 1005 TELECOMMUNICATIONS CABLING INFRASTRUCTURE

**SECTION 00 1113 - INVITATION FOR QUOTES**

**OWNER: JOHNSON COUNTY, IOWA**

**PROJECT: JOHNSON COUNTY COURTHOUSE**

**PROJECT 1 – FLOOR INFILL**

**PROJECT 2 - TEMPORARY COURTROOM**

**NOTICE TO POTENTIAL QUOTE SUBMITTERS;**

Notice is given hereby that Johnson County, Iowa will receive sealed quotes for renovation work for the above projects until 2:00 pm, local Time, on Monday, September 20, 2021.

The Projects are described in general as:

Project 1 – Floor Infill: the work includes selective demolition of architectural and mechanical / electrical items and floor infill.

Project 2 – Temporary Courtroom: the work includes architectural and mechanical / electrical to accommodate a temporary courtroom.

Submitters may submit quotes for either or both projects. The contracts for Project 1 and Project 2 are not linked and may be awarded to different submitters.

Quotes shall be on a stipulated sum basis for a General Construction Contract, including respective mechanical and electrical Work; segregated bids will not be accepted.

Quote Security in the amount of five percent (5%) of the quote must accompany quote in accordance with the Instructions to Quote Submitters.

Quotes will be received at the Auditor's Office, Johnson County Administration Building, 913 South Dubuque Street, Iowa City, IA 52240.

Quotes received after 2:00pm will not be accepted.

**EXAMINATION OF PROCUREMENT DOCUMENTS:**

As many as two (2) sets of printed Procurement Documents may be obtained by Quote Submitters directly from DB Reprographics upon depositing the sum of \$50.00 (refundable) for each set of documents.

The deposit amount will be refunded within ten (10) calendar days following quote opening, provided complete sets of documents in satisfactory condition are returned, postpaid, to:

DB Reprographics, Inc., 1207 Highland Court, Iowa City, IA 52240; (319) 359-1069; Contact: David Burlingame; David@DBRepro.com; www.planroomdirect.com.

Electronic Procurement Documents may be viewed online through the Johnson County website address: <https://www.johnsoncountyiowa.gov/bids-and-proposals>.

Printed sets of Procurement Documents may be examined at:

Neumann Monson Architects, 221 East College Street, Suite 303, Iowa City, IA 52240  
Johnson County Auditor's Office, 913 South Dubuque Street, Iowa City, IA 52240

**OTHER REQUIREMENTS**

Refer to Section 00 2113 – Instructions to Quote Submitters for more information.

Products and materials incorporated in the Work of this Project are Exempt from Iowa sales tax and local option sales tax.

Performance Bond and Labor and Material Payment Bond will be required in the full amount of the contract.

Work required by the proposed Contract shall begin upon ISSUANCE OF THE OWNER'S "NOTICE TO PROCEED". The Work under this Contract shall have limited on-site access. The Substantial Completion Date for Project 1 is October 29, 2021, and Project 2 is December 15, 2021, subject to an extension of time which may be granted by the Owner.

The Owner reserves the right to reject any or all quotes, to waive irregularity in the quotes and to enter into such contract as shall be deemed to be in the Owner's best interest.

**SITE ASSESSMENT:**

SITE EXAMINATION

Examine the project site before submitting a quote.

**PRE-QUOTE SITE VISIT**

A pre-quote site visit has been scheduled for 8:00am on Tuesday, September 14, 2021. Attendees shall meet at the West Secure Building Entrance of the Johnson County Courthouse, 417 South Clinton Street, Iowa City, IA 52240, no later than 8:00 am. Attendees shall then be escorted to the work area for the site visit.

All general and subcontract quote submitters are invited to attend.

Representatives of the Owner and Architect will be in attendance.

**END OF INVITATION FOR QUOTES**

## **SECTION 00 2113 - INSTRUCTIONS TO QUOTE SUBMITTERS**

### **A General:**

1. Types of Quotes: Proposals shall be made as lump sum quotes for each project as described in the documents. PROJECT 1 – FLOOR INFILL and PROJECT 2 -TEMPORARY COURTROOM, ARE INCLUDED IN THIS PROJECT MANUAL, YOU MUST USE THE SPECIFIC SEPARATE QUOTE FORM DESIGNATED FOR EACH PROJECT. Submitters may submit quotes for either or both projects. The contracts for Project 1 and Project 2 are not linked and may be awarded to different submitters.
2. Time and Place:
  - a. Quotes will be received at the Auditor's Office, Johnson County Administration Building, 913 South Dubuque Street, Iowa City, IA 52240 before 2:00 p.m. CDT on Monday, September 20, 2021. Quotes received after this time will not be accepted.
3. Pre-Quote Site Visit:
  - a. A pre-quote site visit is available for all quote submitters.
    - i. Date: Tuesday, September 14, 2021, 8:00 a.m. Central time
    - ii. Location: 417 S. Clinton St. Iowa City, IA 52240
4. Documents:
  - a. Electronic Procurement Documents may be viewed online through the Johnson County website address:  
<https://www.johnsoncountyiowa.gov/bids-and-proposals>.
5. Architect's Opinion of Probable Cost:
  - a. The Architect's Opinion of Probable Cost for Project 1 is \$60,000.
  - b. The Architect's Opinion of Probable Cost for Project 2 is \$110,000.

### **B Quote Documents:**

1. Examination:
  - a. Quote submitters shall carefully examine the Project Manual to obtain first-hand knowledge of the project. Contractors will not be given extra payment for conditions which can be determined by examining the documents.

2. Questions:

- a. Submit all questions to the Architect, in writing. Direct questions to Scott Palmberg, AIA, [spalmberg@neumannmonson.com](mailto:spalmberg@neumannmonson.com). Replies will be issued to all Quote submitters of record as addenda to the documents and will become part of the contract. The Architect and Owner will not be responsible for oral clarification. Questions received less than seven (7) business days before quote opening cannot be answered.

3. Substitutions:

- a. No substitution for the materials and equipment described in the contract documents will be considered during the quote period unless written request has been submitted to Neumann Monson Architects, 221 East Street, Suite 303, Iowa City, Iowa 52240, ATTN: Scott Palmberg. These considerations must be received at least seven (7) business days prior to the date set for receipt of quotes.
- b. Each such request shall include a complete description of the proposed substitute, the name of the material or equipment for which it is to be substituted, drawings, cuts, performance and test data and any other data or information necessary for a complete evaluation.
- c. If Architect approves any proposed substitution, such approval shall not be considered official until it is set forth in an addendum. Quote Submitters are cautioned to refrain from including in their quote any substitutions which are not confirmed by written addenda.

C Quote Submittal Procedures:

1. Preparation of Quotes:

- a. Quotes shall be made on unaltered copies of the quote forms furnished by the Architect as part of this manual. Fill in all required blank spaces and submit three (3) copies.
- b. Quotes not signed by individuals making them must have attached thereto a power of attorney evidencing authority to sign quote in name of the person for whom it is signed.
- c. Quotes signed for a co-partnership must be signed by all co-partners or by an attorney-in-fact. If signed by an attorney-in-fact, there must be attached to quote a power of attorney evidencing authority to sign quote.
- d. Quotes signed for a corporation shall be signed with the legal name of the corporation, followed by the name of the state of incorporation and the

legal signatures of an officer authorized to bind the corporation to a contract.

- e. Quotes signed for any other legal entity shall have attached thereto evidence of the authority of the person signing.

2. Submission of Quotes:

- a. Quote submitters shall submit quotes in a sealed, opaque envelope with the name of the project clearly stated on the front:
  - i. Johnson County Courthouse – Project 1 - Floor Infill
  - ii. Johnson County Courthouse – Project 2 - Temporary Courtroom
  - iii. Name of Quote submitter
- b. The Owner, Johnson County, is not responsible for delays occasioned by the U.S. Postal Service or any other means of delivery employed by the Quote Submitter. Similarly, the Owner is not responsible, and will not open, any quote responses that are received on or after the time stated above. Late submittals will be retained, unopened. No responsibility will be attached to any person for premature opening of a quote not properly identified.

3. Modification and Withdrawal:

- a. Quotes may not be modified after submittal.
- b. Quotes may be withdrawn at any time prior to quote opening, but may not be resubmitted.
- c. No quote may be withdrawn for a period of thirty (60) days after the quote opening.

4. Disqualification:

- a. The Owner reserves the right to disqualify quotes, before or after opening, upon evidence of collusion with intent to defraud or other illegal practices upon the part of the quoter.

5. Governing Laws and Regulations:

- a. The Quote submitter's attention is directed to the fact that all applicable federal, state, and municipal laws and ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract as though therein written out in full.

6. Award and Execution of Contract:

- a. The Owner reserves the right to reject any and all quotes, to waive minor informalities in any quote, or to make award in the best interest of the Owner.
- b. Quotes will be evaluated on the date above. A quote tabulation summary will be provided to all companies who submitted a quote. Quote results will not be given over the telephone. Project 1 and Project 2 are not linked and may be awarded to different submitters.

7. Execution of Contract:

- a. The Owner reserves the right to accept any quote, in accordance with the Code of Iowa, to reject any quote on the basis of quote irregularity or to waive irregularities.
- b. Each quote shall be prepared, if so requested by the Owner, to present evidence of experience, qualifications, and financial responsibility to carry out the terms of the contract.
- c. Notwithstanding any delay in preparation and execution of the formal contract agreement, each quote shall be prepared, upon written notice of quote acceptance, to commence work within fourteen (14) days following the receipt of official written orders of the Owner to proceed, or on date stipulated in such order.
- d. Contract form will be the "Standard Form of Agreement between Owner and Contractor," AIA Form 101, with Johnson County's specified modifications to contract language, or a negotiated contract prepared by the Owner and agreed upon by the Contractor and signed by the Johnson County Director and Contractor. Contract Documents include any Addenda issued by Owner, the Project Manual dated September 8, 2021 by Neumann Monson Architects (the "Project Manual"), AIA Document 101 (Owner-Contractor Agreement Form) as modified by Division 00 7000 and their subparts in the Project Manual, and the Drawings in the solicitation for quotes for this Project. This contract will authorize the Work to begin, assuming insurance requirements have been met.
- e. All quotes shall be presumed to be a quote submitter's best-and-final offer. Any quote exception, stipulation, counter-offer, requirement, and/or other alternative term or condition (e.g. quote submitter's alternative contract form) to language within the Contract Documents shall be justification to reject a response to this solicitation, in Owner's sole discretion.



8. Completion Date:

- a. All quote submitters shall take into account the Owner's desire that construction be substantially complete on the following dates:  
Project 1: October 29, 2021.  
Project 2: December 15, 2021.

**END OF SECTION 00 2113**



**SECTION 00 4113.1 - QUOTE FORM**

**PROJECT 1 – FLOOR INFILL**

**Quotes Due at 2:00 p.m. CDT, September 20, 2021**

**To: Johnson County Auditor's Office  
913 Dubuque St.  
Iowa City, IA 52240**

**ATTN: Johnson County Courthouse Project 1 - Floor Infill  
Ray Forsythe, Special Projects Manager**

The undersigned Quote Submitter, having examined the Drawings and Specifications, and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials and supplies, and to construct the project in accordance with the proposed Contract Documents, within the time set forth therein, and at the prices stated below. These rates are to cover all expenses incurred in performing the work required under the proposed Contract Documents, of which this quote is a part.

NOTE THAT THIS QUOTE FORM IS ONLY FOR JOHNSON COUNTY COURTHOUSE PROJECT 1 - FLOOR INFILL. TO SUBMIT A SEPARATE QUOTE FOR PROJECT 2 - TEMPORARY COURTROOM, ALSO INCLUDED IN THIS PROJECT MANUAL, YOU MUST USE THE SPECIFIC SEPARATE QUOTE FORM DESIGNATED FOR THAT PROJECT. Submitters may submit quotes for either or both projects. The contracts for Project 1 and Project 2 are not linked and may be awarded to different submitters.

Quote Submitter acknowledges receipt of the following Addenda which are a part of the Documents: Numbers \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

**BASE PROPOSAL:**

Quote Submitter agrees to perform all the work described in the proposed Contract Documents and shown on the Drawings for the sum of:

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

Amount shall be indicated in both words and figures. In case of discrepancy, the amount indicated in words will govern.

2. The undersigned Quote Submitter states that full compliance with the proposed Contract Documents is maintained in this quote.
3. Quote Submitter understands that the Owner reserves the right to reject any and all quotes, waive irregularities or technicalities in any quote, and accept any quote in whole or in part which is deemed to be in its best interest.
4. Quote Submitter agrees that this quote shall be good and may not be withdrawn for a period of sixty (60) calendar days after the public opening and reading of the quotes.
5. Quote Submitter hereby certifies: (a) that this quote is genuine and is not made in the interest of or on behalf of any undisclosed person, firm or corporation; (b) that Quote Submitter has not directly or indirectly induced or solicited any other quote Submitter to put in a false or sham quote; (c) that Quote Submitter has not solicited or induced any person, firm or corporation to refrain from quoting; and (d) that Quote Submitter has not sought by collusion to obtain any advantage over any other quote Submitter or over the Owner; (e) that quote Submitter fully understands this quote solicitation and the Contract Documents in their entirety and in detail, including the Instructions to Quote Submitter in the Project Manual, has made any inquiries to the Owner as necessary to gain such understanding, and understands that Owner reserves the right to disqualify any quote Submitter or cancel and award, if made, to any quote Submitter who demonstrates less than such understanding in Owner's sole discretion, at no fault, cost, or liability whatsoever to the Owner.

FIRM NAME: \_\_\_\_\_

SUBMITTED BY: \_\_\_\_\_

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

DATE: \_\_\_\_\_ Incorporated \_\_\_\_YES\_\_\_\_NO

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

\_\_\_\_\_

\_\_\_\_\_

CONTACT EMAIL: \_\_\_\_\_

CONTACT TELEPHONE NUMBER: \_\_\_\_\_

FEDERAL TAX IDENTIFICATION NUMBER: \_\_\_\_\_

**END OF SECTION 00 4113.1**

**SECTION 00 4113.2 - QUOTE FORM**

**PROJECT 2 – TEMPORARY COURTROOM**

**Quotes Due at 2:00 p.m. CDT, September 20, 2021**

**To: Johnson County Auditor's Office  
914 Dubuque St.  
Iowa City, IA 52240**

**ATTN: Johnson County Courthouse Project 2 – Temporary Courtroom  
Ray Forsythe, Special Projects Manager**

1. The undersigned Quote Submitter, having examined the Drawings and Specifications, and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials and supplies, and to construct the project in accordance with the proposed Contract Documents, within the time set forth therein, and at the prices stated below. These rates are to cover all expenses incurred in performing the work required under the proposed Contract Documents, of which this quote is a part.  
NOTE THAT THIS QUOTE FORM IS ONLY FOR JOHNSON COUNTY COURTHOUSE PROJECT 2 - TEMPORARY COURTROOM. TO SUBMIT A SEPARATE QUOTE FOR PROJECT 1 FLOOR INFILL, ALSO INCLUDED IN THIS PROJECT MANUAL, YOU MUST USE THE SPECIFIC SEPARATE QUOTE FORM DESIGNATED FOR THAT PROJECT. Submitters may submit quotes for either or both projects. The contracts for Project 1 and Project 2 are not linked and may be awarded to different submitters.

Quote Submitter acknowledges receipt of the following Addenda which are a part of the Documents: Numbers \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

**BASE PROPOSAL:**

Quote Submitter agrees to perform all the work described in the proposed Contract Documents and shown on the Drawings for the sum of:

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

Amount shall be indicated in both words and figures. In case of discrepancy, the amount indicated in words will govern.

2. The undersigned Quote Submitter states that full compliance with the proposed Contract Documents is maintained in this quote.

3. Quote Submitter understands that the Owner reserves the right to reject any and all quotes, waive irregularities or technicalities in any quote, and accept any quote in whole or in part which is deemed to be in its best interest.

4. Quote Submitter agrees that this quote shall be good and may not be withdrawn for a period of sixty (60) calendar days after the public opening and reading of the quotes.

5. Quote Submitter hereby certifies: (a) that this quote is genuine and is not made in the interest of or on behalf of any undisclosed person, firm or corporation; (b) that Quote Submitter has not directly or indirectly induced or solicited any other quote Submitter to put in a false or sham quote; (c) that Quote Submitter has not solicited or induced any person, firm or corporation to refrain from quoting; and (d) that Quote Submitter has not sought by collusion to obtain any advantage over any other quote Submitter or over the Owner; (e) that quote Submitter fully understands this quote solicitation and the Contract Documents in their entirety and in detail, including the Instructions to Quote Submitter in the Project Manual, has made any inquiries to the Owner as necessary to gain such understanding, and understands that Owner reserves the right to disqualify any quote Submitter or cancel and award, if made, to any quote Submitter who demonstrates less than such understanding in Owner's sole discretion, at no fault, cost, or liability whatsoever to the Owner.

FIRM NAME: \_\_\_\_\_

SUBMITTED BY: \_\_\_\_\_

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

DATE: \_\_\_\_\_ Incorporated \_\_\_\_YES\_\_\_\_NO

OFFICIAL ADDRESS:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CONTACT EMAIL: \_\_\_\_\_

CONTACT TELEPHONE NUMBER: \_\_\_\_\_

FEDERAL TAX IDENTIFICATION NUMBER: \_\_\_\_\_

**END OF SECTION 00 4113.2**

**SECTION 00 4313 - BOND**

**FORM OF BOND**

**KNOW ALL MEN BY THESE PRESENTS, THAT WE,**

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

(Business address) \_\_\_\_\_

(City, State, Zip Code) \_\_\_\_\_

as Principal, hereinafter called the Principal, and

(Surety) \_\_\_\_\_

a corporation duly organized under the laws of the State of \_\_\_\_\_ as surety,  
hereinafter called the Surety, are firmly bound unto

Johnson County, Iowa

913 South Dubuque Street, Iowa City, IA 52240

as Obligee, hereinafter called the Obligee, in the penal sum of Five Percent (5%) of the total Bid,  
\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

in lawful money of the United States, for the payment of which sum well and truly to be made, we the  
said Principal and the said Surety bind ourselves, our heirs, executors, administrators, successors and  
assigns, jointly and severally, firmly by these presents.

**WHEREAS, THE PRINCIPAL HAS SUBMITTED THE ACCOMPANYING QUOTE FOR**

Construction of: Johnson County Courthouse

Project 1 – Floor Infill

Project 2 - Temporary Courtroom

**NOW, THEREFORE,**

if the Principal shall not withdraw said quote within the period specified, within 45 days after said  
opening, and shall, within the period specified therefore, or, if no period be specified, within seven (7)  
days after the prescribed forms are presented for signature, enter into a written contract with the  
Owner, in accordance with the quote as accepted and give bond with good and sufficient surety or  
sureties, as may be required for the faithful performance and proper fulfillment of the contract, then the  
above obligation shall be void and of no effect, otherwise to remain in full force and effect.

By virtue of statutory authority, the full amount of this bond shall be forfeited to the obligee in  
liquidation of damages sustained in the event that the Principal fails to execute the contract and  
provide the bonds required by the specifications and by law.

In witness whereof, the parties have executed this instrument under their several seals this the name  
and corporate seal of each corporate party being hereto affixed and these presents duly signed by the  
undersigned representatives pursuant to authority of the governing bodies.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, 2021.

(Witness) \_\_\_\_\_ (Principal) \_\_\_\_\_

(Title) \_\_\_\_\_ (Seal)

(Witness) \_\_\_\_\_ (Surety) \_\_\_\_\_

(Title) \_\_\_\_\_ (Seal)

**END OF BOND**





## **SECTION 00 5000 – AGREEMENT**

### **FORM OF AGREEMENT**

**AIA Document A101, Owner-Contractor Agreement Form – Stipulated Sum 2017 Edition, as modified by the Owner forms the basis of Contract between the Owner and Contractor.**

A copy of the form of Agreement is available at the Architect's Office.

**END OF SECTION 00 5000**



## **SECTION 00 7000 - GENERAL AND SUPPLEMENTARY CONDITIONS**

### **A GENERAL CONDITIONS**

2. AIA Document A201 "General Conditions of the Contract for Construction", 2017 Edition, Articles 1 through 15 inclusive, is a part of the construction contracts, and is incorporated herein as fully as if herein set forth.
3. Copies of this document are on file at and available from the Architect's office.

### **B SUPPLEMENTARY CONDITIONS**

The following supplements modify, change, delete from, or add to the "General Conditions of the Contract for Construction." Where any article of the General Conditions is modified or any paragraph, subparagraph or clause thereof is modified or deleted by these supplements, the unaltered provisions of that article, paragraph, subparagraph, or clause shall remain in effect.

#### **MODIFICATIONS OF ARTICLE 1 – GENERAL PROVISIONS**

##### **1.1 Miscellaneous Definitions**

The term "Product" as used in these Supplementary Conditions includes materials, systems, and equipment.

The term "Project Manual" as used in these Supplementary Conditions includes the Quote Submittal Requirements, Conditions of the Contract and the Specifications.

#### **MODIFICATIONS OF ARTICLE 3 – CONTRACTOR**

##### **3.6 Taxes**

Change subparagraph 3.6 to the following

- 3.6.1 Iowa Sales Tax Exemption. In accordance with provisions of the Code of Iowa and the Iowa Administrative Rules, "Iowa Construction Sales Tax Exemption Certificates" will be issued for this project. DO NOT include Iowa sales tax or local option sales tax in determining the project quote amount. The successful quote Submitter, within 48 hours of the receipt of "Owner's Notice of Intent to Award a Contract," shall provide to the Owner a list of all Subcontractors selected to perform work on this project. The subcontractor list shall include each firm's name, tax identification number, and address.

- 3.6.2 Using information provided by the successful quote Submitter, the Owner will apply to the Iowa Department of Revenue and Finance for 1) Authorization Letters and 2) Iowa Construction Sales Tax Exemption Certificates, to be issues to the Contractor and each Subcontractor to purchase materials and products for this project free of sales/use tax and local options taxes that might otherwise apply.

#### MODIFICATIONS OF ARTICLE 7 – CHANGES IN THE WORK

- 7.2.2 Add: Cost shall be limited to the following: Cost of materials, including cost of delivery, cost of labor, including Social Security, old age and unemployment insurance, and fringe benefits under collective bargaining agreements; Workman's Compensation insurance; bond premiums; and rental value of power tools and equipment. Overhead shall include the following: Supervision, superintendence, wages of timekeepers, watchmen and clerks, hand tools, incidentals, general office expense, and all other expenses not included in cost. The maximum percentage of combined overhead and profit for changes in the work performed by the Contractor shall be 10%. If the changed work is performed by a Subcontractor, a maximum of 10% may be added by that Subcontractor on his work for combined overhead and profit and an additional maximum of 5% may be added by the Contractor for administration and coordination of said Subcontractor work. The Contractor shall verify compliance of the Subcontractors and shall not sign Change Orders which do not comply with the maximum limits.

#### MODIFICATIONS OF ARTICLE 9 – PAYMENTS AND COMPLETION

At the end of Subparagraph 9.10.1, add the following:

- i. In accordance with Iowa law, Final Payment (retainage amount) shall not be released until at least thirty-one (31) days after completion and final acceptance by the Owner of all Work required by the Contract.

#### MODIFICATIONS OF ARTICLE 10 – PROTECTIONS OF PERSONS & PROPERTY

- 10.1.1 Add: Attention is directed to the regulations issued by the Secretary of Labor pursuant to Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333) entitled "Safety and Health Regulations for Construction" (29 CFR Part 1926). The Contractor shall be required to comply with those regulations to the extent that any resulting Contract involves construction.

## MODIFICATIONS OF ARTICLE 11 – INSURANCE AND BONDS

### **WORK SHALL NOT BEGIN UNTIL THE CERTIFICATE OF INSURANCE AND ALL REQUIRED ENDORSEMENTS ARE RECEIVED AND APPROVED BY JOHNSON COUNTY.**

Delete original Subparagraph 11.1.1 and replace with the following:

A. Section 11.1.1 of the General Conditions of the Contract for Construction (AIA Document A201-2017) as included in this Project Manual (the "General Conditions") provides that Contractor shall purchase and maintain insurance coverage for limits as specified in the Contract Documents. The limits of liability for the insurance required by Section 11.1.1 of the General Conditions shall not be less than the following amounts or greater where required by laws and regulations:

#### 1. Workers' Compensation: Statutory

#### 2. Employer's Liability

Bodily Injury by Accident, Each Accident: \$ 500,000

Bodily Injury by Disease, Each Employee \$ 500,000

Policy Limit \$ 500,000

#### 3. General Liability, including completed operations and product liability coverages and eliminating the exclusion with respect to property under the care, custody and control of Contractor

General Aggregate: \$ 2,000,000

Products – Completed Operations Aggregate: \$ 2,000,000

Personal and Advertising Injury (Per Person/Organization): \$ 1,000,000

Each Occurrence (Bodily Injury and Property Damage): \$ 1,000,000

Fire Legal Liability Damage Limit (any One Fire): \$ 50,000

Medical Expense Limit (Any One Person): \$ 5,000

Property Damage liability insurance will provide Explosion, Collapse, and Underground coverages. Policy shall include as a minimum the following coverages:

- a. Broad Form Property Damage Coverage.
- b. An elimination of the exclusions with respect to property under the care, custody or control of Contractor. In lieu of elimination of the exclusion, Contractor may provide Builder's Risk or Installation Floater coverage for property under the care, custody, or control of Contractor.
- c. Contractual Liability Coverage.
- d. Independent Contractor Coverage.

#### 4. Automobile Liability

- a. Bodily Injury, Each Person: \$ 1,000,000; Each Accident: \$ 1,000,000
- b. Property Damage, Each Accident: \$ 1,000,000
- c. Combined Single Limit: \$ 1,000,000
- d. Policy shall include contractual liability coverage and coverage on all owned, nonowned, and hired vehicles.

5. The Contractual Liability coverage required by Sec. 11.1.1.8 of the General Conditions shall provide coverage for not less than the following amounts:

- a. Bodily Injury, Each Accident: \$ 1,000,000; Annual Aggregate \$ 2,000,000
- b. Property Damage, Each Accident: \$ 1,000,000; Annual Aggregate \$ 2,000,000

#### 6. Additional insurances required:

- a. Umbrella. The stated limits of paragraphs A(1) through A(5) of this Article 3 can be obtained through individual policies or if Contractor desires to reduce underlying limits to minimums required by its insurance carrier, an umbrella policy must accordingly be provided to maintain overall total level of coverage. Any Umbrella insurance shall be written on an occurrence basis and pay on behalf form and shall include the same endorsements and additional insureds as required of the primary policies.
- b. An excess umbrella policy (pay on behalf form) with limits of \$2,000,000 for Employer's liability, Contractor's General Liability, (bodily injury, personal injury and property damage), Automobile Liability, and Contractual Liability on a combined basis shall be provided. Any Excess insurance shall be written on an occurrence basis and pay on behalf form and shall include the same endorsements and additional insureds as required of the primary policies. Policy shall include Owner, Architect and any others required by Section 11.1 of the General Conditions as additional insureds.

B. Section 11.3.1.3 of the General Conditions is hereby deleted and replaced in its entirety with the following:

If the property insurance requires deductibles, the Contractor shall pay costs not covered because of such deductibles in the event of a claim arising from the Contractor's error or negligence.

C. Section 11.1.4 of the General Conditions provides that Contractor shall cause the commercial liability coverage required by the Contract Documents to include the Owner, among others, as an additional insured for certain claims.

1. Additional insureds coverage:

a. Insurance certificates shall specifically indicate by name the additional insureds which are to include Owner and Architect as well as other persons or entities so identified:

1) "Johnson County, Iowa, its officers and employees, and Architect shall be named as additional insureds" on the Contractor's, subcontractor's and independent contractor's liability insurance policies and certificates of insurance.

2) No Others

2. General Aggregate Limits specified above shall apply separately to this project by attachment of Additional Insured Endorsement, and Governmental Immunities Endorsement, text as given below.

JOHNSON COUNTY, IOWA

ADDITIONAL INSURED ENDORSEMENT

Johnson County, Iowa, including all its elected and appointed officials, all its employees and volunteers, all its boards, commissions and/or authorities and their board members, employees, and volunteers, are included as Additional Insured with respect to liability arising out the Insured's work and/or services performed for Johnson County, Iowa. This coverage shall be primary to the Additional Insured, and not contributing with any other insurance or similar protection available to the Additional Insureds, whether available coverage be primary, contributing or excess.

**A COPY OF ONE (1) ENDORSEMENT IS REQUIRED:**

**Cancellation and Material Changes Endorsement**

Thirty (30) days Advance Written Notice of Cancellation, Non-Renewal, Reduction in insurance coverage and/or limits and ten (10) days written notice of non-payment of premium shall be sent to:

Ray Forsythe, Special Projects Manager  
Johnson County Board of Supervisors Office  
913 S. Dubuque Street  
Iowa City, IA 52240-4273  
Email: [rforsythe@johnsoncountyiowa.gov](mailto:rforsythe@johnsoncountyiowa.gov)

(Please note that Johnson County does accept a signed letter on the agent's letterhead, from the insured's insurance agent, confirming that the agent will provide notice as indicated above.)

The Contractor is required to purchase and maintain insurance coverage to protect the Contractor and Johnson County throughout the duration of this Contract as enumerated above in the minimum limits above written and the requirement shall be a part of the Contract. Failure on the part of the Contractor to maintain this insurance in full effect will be treated as a failure on the part of the Contractor to comply with these requirements and be considered sufficient cause to suspend the work, withhold payment(s), and/or be disqualified in the future.

The insurance policies shall be issued by insurers authorized to do business in the State of Iowa and currently having an A.M. Best Rating of "B+" or better. All policies shall be occurrence form. If Professional Liability coverage is written on a claim made policy form, the certificate of insurance must clearly state coverage is claims made and coverage must remain in effect for at least two years after final payment with the Contractor continuing to furnish Johnson County certificates of insurance.

The Contractor shall be responsible for deductibles and self-insured retentions in the Contractor's insurance policies.

The Contractor is required to give Johnson County notice of any change in coverage, specifically, any reduction in coverage and cancellation of coverage no less than thirty (30) days prior to the effective date of any non-renewal or cancellation of any policies required by the Contract.

JOHNSON COUNTY intends to be an Additional Insured with coverage being primary and not contributing with any other insurance or similar protection available to JOHNSON COUNTY whether any other coverage is primary, contributing or excess. JOHNSON COUNTY may require an endorsement preserving JOHNSON COUNTY's governmental immunities under such coverage. See attached.

In the case of any work sublet, the Contractor shall require subcontractors and independent contractors working under the direction of either the Contractor or a subcontractor to carry and maintain the same workers compensation and liability insurance required of the Contractor.

A Certificate of Insurance is required evidencing all required insurance coverage as provided above with any required endorsements attached so as to evidence their



inclusion in the coverage. The Certificate of Insurance is due before the Contract can be approved.

The following address must appear in the Certificate Holder section:

Johnson County Board of Supervisors  
913 S. Dubuque Street  
Iowa City, IA 52240-4273

Email: Ray Forsythe: [rforsythe@johnsoncountyiowa.gov](mailto:rforsythe@johnsoncountyiowa.gov)

The Producer's contact person's name, phone number and e-mail address are required.

Certificate may be sent by e-mail ([rforsythe@johnsoncountyiowa.gov](mailto:rforsythe@johnsoncountyiowa.gov)) to the attention of Ray Forsythe.

At the end of Subparagraph 11.1.1 add the following:

**Bonding Requirements**: Applicable for construction or facility improvement contracts or subcontracts exceeding the simplified acquisition threshold (\$150,000), the awarding agency may accept the bonding policy and requirements of the recipient (State of Iowa) or sub-recipient (JOHNSON COUNTY) provided the awarding agency has made a determination that the awarding agency's interest is adequately protected. If such a determination has not been made, the minimum requirements shall be as follows:

- a. A quote guarantee from each Contractor equivalent to five percent (5%) of the quote price. The "quote guarantee" shall consist of a firm commitment such as a quote bond, certified check, or other negotiable instrument accompanying a quote as assurance that the Contractor will, upon acceptance of its quote, execute such contractual documents as may be required within the time specified.
- b. A performance bond on the part of the Contractor for 100 percent (100%) of the contract price. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the Contractor's obligations under such contract.
- c. A payment bond on the part of the Contractor for 100 percent of the contract price. A "payment bond" is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

JOHNSON COUNTY, IOWA

GOVERNMENTAL IMMUNITIES ENDORSEMENT

(for use when including the County as an Additional Insured)

1. Nonwaiver of Government Immunity. The insurance carrier expressly agrees and states that the purchase of this policy and the including of Johnson County, Iowa as Additional Insured does not waive any of the defenses of governmental immunity available to Johnson County, Iowa under Code of Iowa Section 670.4 as it now exists and as it may be amended from time to time.
2. Claims Coverage. The insurance carrier further agrees that this policy of insurance shall cover only those claims not subject to the defense of governmental immunity under the Code of Iowa Section 670.4 as it now exists and as may be amended from time to time.
3. Assertion of Government Immunity. Johnson County, Iowa shall be responsible for asserting any defense of governmental immunity, and may do so at any time and shall do so upon the timely written request of the insurance carrier. Nothing contained in this endorsement shall prevent the carrier from asserting the defense of governmental immunity on behalf of Johnson County, Iowa.
4. Non-Denial of Coverage. The insurance carrier shall not deny coverage under this policy and the insurance carrier shall not deny any of the rights and benefits accruing to Johnson County, Iowa under this policy for reasons of governmental immunity unless and until a court of competent jurisdiction has ruled in favor of the defense(s) of governmental immunity asserted by Johnson County, Iowa.
5. No Other Change in Policy. The insurance carrier and Johnson County, Iowa agree that the above preservation of governmental immunities shall not otherwise change or alter the coverage available under the policy.

**END OF SECTION**

## **SECTION 00 7414 - SPECIAL CONDITIONS**

### **ARTICLE 1 - LIQUIDATED DAMAGES**

Time is of the essence of this contract. Contractor and Owner recognize that Owner will suffer financial and other losses if the Work is not completed within the times specified in § 3.3.1 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

- A. Substantial Completion: Contractor shall pay Owner \$1,500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in § 3.3.1 above for Substantial Completion until the Work is substantially complete.
- B. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$1,000.00 for each day that expires after such time until the Work is completed and ready for final payment.
- C. Liquidated damages for failing to timely attain Substantial Completion and Final completion are not additive and will not be imposed concurrently.
- D. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in § 3.3.1 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.

### **END OF SPECIAL CONDITIONS**



## **SECTION 01 1000 - SUMMARY**

### **PART 1 GENERAL**

#### **1.01 PROJECT**

- A. Project Name: Johnson County Courthouse, Project 1 and 2
- B. Owner's Name: Johnson County, Iowa.
- C. Architect's Name: Neumann Monson, Inc.
- D. The Project consists of two projects: floor infill and temporary courtroom.

#### **1.02 CONTRACT DESCRIPTION**

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 5000 - Agreement Form.
- B. Work required by the proposed Contract shall begin upon ISSUANCE OF THE OWNER'S "NOTICE TO PROCEED". The Work under this Contract shall have limited on-site access. Mobilization for Work on-site shall begin no earlier than October 1, 2021 and be completed on or before the anticipated Substantial Completion Dates, subject to an extension of time which may be granted by the Owner.

#### **1.03 DESCRIPTION OF ALTERATIONS WORK**

- A. Scope of selective demolition and removal work is shown on drawings and specified in Section 02 4100.
- B. Scope of alterations work is indicated on drawings.

#### **1.04 WORK BY OWNER**

- A. Hazardous Materials Abatement: Should suspected hazardous materials be found during work of this Contract, notify Owner and Architect immediately.

#### **1.05 OWNER OCCUPANCY**

- A. Johnson County, Iowa intends to continue to occupy adjacent portions of the existing building during the entire construction period.
- B. Johnson County, Iowa intends to occupy the Project upon Substantial Completion.
- C. Cooperate with Johnson County, Iowa to minimize conflict and to facilitate Johnson County, Iowa's operations.
- D. Schedule the Work to accommodate Johnson County, Iowa occupancy.

#### **1.06 CONTRACTOR USE OF SITE AND PREMISES**

- A. Construction Operations: Limited to areas noted on Drawings.
- B. Arrange use of site and premises to allow:
  - 1. Johnson County, Iowa occupancy.
  - 2. Work by Others.
  - 3. Use of site and premises by the public.
- C. Provide access to and from site as required by law and by Johnson County, Iowa:
  - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
  - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- D. Existing building spaces may not be used for storage.
- E. Time Restrictions: Limit conduct of especially noisy work to mornings prior to 8:00 am or on weekends.
- F. Utility Outages and Shutdown:

1. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Johnson County, Iowa and authorities having jurisdiction.
2. Prevent accidental disruption of utility services to other facilities.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

## **SECTION 01 2000 - PRICE AND PAYMENT PROCEDURES**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Procedures for preparation and submittal of Schedule of Values and Applications for Progress Payments.
- B. Contract modification procedures for changes in the Work.
- C. Procedures for preparation and submittal of Application for Final Payment.

#### **1.02 DEFINITIONS**

- A. The term "day" as used in the Contract Documents shall mean calendar day, unless otherwise specifically defined.

#### **1.03 RELATED REQUIREMENTS**

- A. Section 00 5000 - Agreement.
- B. Section 00 7413 – General and Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.
- C. Section 01 3000 - Administrative Requirements: Procedures for transmission of Schedule of Values, Applications for Payment, and contract modification documents using electronic document submittal service.

#### **1.04 SCHEDULE OF VALUES**

- A. Submit Schedule of Values within 10 days after date of Owner-Contractor Agreement. Submit draft to Architect for approval.
- B. Submit Schedule of Values in electronic media format.
- C. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify bonds and insurance.
- D. Revise schedule to list approved Change Orders, with each Application For Payment.

#### **1.05 APPLICATIONS FOR PROGRESS PAYMENTS**

- A. Make applications for progress payments in amounts equal to ninety-five percent (95%) of the value of Work completed, including cost of materials and equipment properly stored at the jobsite, less the amount of previous payments.
  - 1. The five percent (5%) contract retainage may become payable upon issuance of the Certificate of Substantial Completion. Refer to Section 01 7700 for additional requirements.
- B. Payment Period: Submit at intervals stipulated in the Agreement.
- C. Execute certification by signature of authorized officer.
- D. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- E. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
- F. Submit Applications for Payment in electronic media format.
- G. Include the following with the application:
  - 1. Construction progress schedule, revised and current as specified in Section 01 3000 - Administrative Requirements.
  - 2. Partial release of liens from major subcontractors and vendors.
  - 3. Affidavits attesting to off-site stored products.
- H. When Architect requires substantiating information, submit data justifying dollar amounts in question.

## **1.06 CONTRACT MODIFICATION PROCEDURES**

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to the Contract Documents.
- B. Minor Changes in the Work: Architect will issue supplemental instructions directly to Contractor authorizing minor changes in the Work (not involving adjustments to Contract Sum or Contract Time) on Architect's standard "Architect's Supplemental Instructions" (ASI) form.
  - 1. Refer to standard ASI Form attached to the end of this Section.
- C. Construction Change Directives: Architect will issue a Construction Change Directive on Architects standard "Construction Change Directive" (CCD) form. The Construction Change Directive instructs Contractor to immediately proceed with changes in the Work that will involve adjustment of either Contract Sum or Contract Time, or both, for inclusion in a subsequent Change Order.
  - 1. CCD forms will be signed by Owner and Architect, and may be signed by Contractor.
  - 2. The CCD document will include detailed description of changes in the Work and will designate method of determining change in either Contract Sum or Contract Time, or both.
  - 3. Maintain detailed records on time and material basis of Work required by the CCD.
  - 4. After completion of change, submit itemized account and supporting data necessary to substantiate cost and time adjustments to Contract.
  - 5. Refer to standard CCD Form attached to the end of this Section.
- D. Proposal Requests: For changes in the Work for which advance pricing is desired, Architect will issue a Proposal Request on Architect's standard "Proposal Request" (PR) form. The Proposal Request will include a detailed description of proposed changes in the Work that may involve adjustment of either Contract Sum or Contract Time, or both, with supplementary or revised Drawings and Specifications, if necessary.
  - 1. Proposal Requests issued by Architect are for pricing consideration only. Contractor shall not consider them instructions either to stop Work in progress or to execute the proposed change.
  - 2. Within 15 days after receipt of Proposal Request, Contractor shall submit a quotation estimating cost adjustments to Contract Sum or Contract Time necessary to execute the proposed change.
  - 3. Only after Owner's acceptance of Proposal Request will adjustment of Contract Sum or Contract Time be included in a subsequent Change Order.
  - 4. Refer to standard PR Form attached to the end of this Section.
- E. Contractor-Initiated Proposals: Contractor may propose a change in either Contract Sum or Contract Time, or both, by submitting a Change Order Request for change to Architect using Contactor's standard form, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on Contract Sum or Contract Time with full documentation.
  - 1. Only after Owner's acceptance of Contractor-Initiated Proposal will adjustment of Contract Sum or Contract Time be included in a subsequent Change Order.
- F. Computation of Change in Contract Sum: As specified in the Agreement and Conditions of the Contract.
  - 1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation as approved by Architect.
  - 2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
  - 3. For pre-determined unit prices and quantities, the amount will based on the fixed unit prices submitted at the time of bid opening.
- G. Substantiation of Costs: Provide full information required for evaluation.
  - 1. Provide the following data:



- a. Quantities of products, labor, and equipment.
  - b. Taxes, insurance, and bonds.
  - c. Overhead and profit.
  - d. Justification for any change in Contract Time.
  - e. Credit for deletions from Contract, similarly documented.
- 2. Support each claim for additional costs with additional information:
  - a. Origin and date of claim.
  - b. Dates and times work was performed, and by whom.
  - c. Time records and wage rates paid.
  - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
- 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- H. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- I. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- J. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of Work affected by the change, and resubmit.
  - 1. Indicate effect of the change in Work, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- K. Promptly enter approved changes in the Work into the Project Record Documents.

#### **1.07 APPLICATION FOR FINAL PAYMENT**

- A. Final Payment shall be the remaining unpaid balance of the final contract sum.
- B. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- C. Application for Final Payment will not be considered until the following have been accomplished:
  - 1. Completion of final punchlist.
  - 2. Owner's written acceptance of the completed Work.
- D. Final Payment shall be made 31 days following Owner's written acceptance of the completed Work.

### **PART 2 PRODUCTS - NOT USED**

### **PART 3 EXECUTION**

#### **3.01 SCHEDULE OF ATTACHMENTS**

- A. Architect will use the following forms as appropriate for documenting Contract Modifications.
  - 1. Architect's Supplemental Instructions (ASI) form.
  - 2. Construction Change Directive (CCD) form.
  - 3. Proposal Request (PR) form.

**END OF SECTION**



## **SECTION 01 3000 - ADMINISTRATIVE REQUIREMENTS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. General administrative requirements.
- B. Coordination requirements.
- C. Preconstruction meeting.
- D. Preinstallation meetings.
- E. Construction progress schedule.
- F. Submittals for review, information, and project closeout.
- G. Number of copies of submittals.
- H. Submittal procedures.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 01 2000 - Price and Payment Procedures: Contract modification procedures.
- B. Section 01 7300 - Execution Requirements: Additional coordination requirements.

#### **1.03 GENERAL ADMINISTRATIVE REQUIREMENTS**

- A. Conform to requirements of Section 01 7300 - Execution Requirements for coordination of execution of administrative tasks with timing of construction activities.

#### **1.04 COORDINATION REQUIREMENTS**

- A. Coordinate construction operations included in various specification Sections to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
  - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
  - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative procedures include, but are not limited to, the following:
  - 1. Preparation of Contractor's Construction Schedule.
  - 2. Preparation of the Schedule of Values.
  - 3. Installation and removal of temporary facilities and controls.
  - 4. Delivery and processing of submittals.
  - 5. Progress meetings.
  - 6. Preinstallation conferences.
  - 7. Project closeout activities.
  - 8. Electronic project management software.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
- E. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

1. Indicate relationship of components shown on separate Shop Drawings.
2. Indicate required installation sequences.

## **PART 2 PRODUCTS - NOT USED**

## **PART 3 EXECUTION**

### **3.01 ELECTRONIC DOCUMENT SUBMITTALS**

- A. All documents transmitted for purposes of administration of the Contract shall be in electronic format such as Portable Document Format (PDF) and transmitted via email.
  1. Besides submittals for review, information, and closeout, this procedure applies to Schedule of Values, Requests For Information (RFIs), progress documentation, contract modification documents (e.g. Architect's Supplementary Instructions, Proposal Requests, Construction Change Directives, and Change Orders), Applications for Payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the Project record.
  2. It is Contractor's responsibility to submit documents in electronic format.
  3. Users need an email address, Internet access, and electronic format review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, [www.adobe.com](http://www.adobe.com), or Bluebeam PDF Revu, [www.bluebeam.com](http://www.bluebeam.com)).
  4. Paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
  5. Drawings and graphic presentations may be submitted in DWF format upon prior approval from the Architect.
  6. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.

### **3.02 PRECONSTRUCTION MEETING**

- A. Architect will schedule a meeting after execution of the Owner - Contractor Agreement, but no later than 10 days after date of "Notice to Proceed".
- B. Attendance Required: All participants at the Preconstruction Meeting shall be familiar with the Project and be authorized to conclude matters relating to the Work.
  1. Johnson County, Iowa.
  2. Architect.
  3. Contractor's Project Manager and Superintendent.
  4. Major Subcontractors.
  5. Manufacturers, suppliers, and other concerned parties may attend the Preconstruction Meeting as necessary.
- C. Agenda:
  1. Submission of executed bonds and insurance certificates.
  2. Distribution of Contract Documents.
  3. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
  4. Designation of responsible personnel representing the parties to Contract, the Owner's jobsite representative, the Contractor's key administrative and field personnel, and Architect.
  5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  6. Scheduling and critical work sequencing.
  7. Use of premises by Johnson County, Iowa and Contractor.
  8. Johnson County, Iowa's requirements and occupancy prior to completion.
  9. Construction facilities and controls provided by Johnson County, Iowa.
  10. Temporary utilities provided by Johnson County, Iowa.
  11. Security and housekeeping procedures.
  12. Application for payment procedures.
  13. Procedures for testing.

14. Procedures for maintaining record documents.
  15. Requirements for start-up of equipment.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Johnson County, Iowa, participants, and those affected by decisions made.

### **3.03 CONSTRUCTION PROGRESS SCHEDULE**

- A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 30 days of Work, with a general outline for remainder of Work.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 5 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- D. Within 5 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.
- F. Incorporate the following schedule for contract closeout:
1. Closeout Meeting: Schedule at least 10 days prior to anticipated date of Substantial Completion. Submit initial copy of Operation and Maintenance Manuals for review.
  2. Demonstration and Instruction: Schedule at least 15 days prior to Substantial Completion.
  3. Contractor's Punchlist and Request for Substantial Completion Inspection: Submit at least 10 days prior to anticipated date of Substantial Completion.
    - a. Architect will conduct inspection of Work within 5 days of receipt of Contractor's Request.
  4. Architect will issue "Certificate of Substantial Completion" in accordance with provisions in the Conditions of the Contract.
  5. Closeout Submittals: See Section 01 7700 - Closeout Procedures.
  6. Final Change Order: Architect will prepare and issue within 5 days after Substantial Completion.
  7. Contractor's Certificate of Final Completion: Architect will conduct Final Inspection of the Work within 5 days of receipt of Contractor's Certificate.
  8. Architect will issue Final Certificate for Payment within 5 days of completing satisfactory Final Inspection.
  9. Owner's written acceptance of the completed Work and Final Payment: See Section 01 2000 - Price and Payment Procedures.
- G. Submit updated schedule with each Application for Payment.

### **3.04 SCHEDULE FORMAT**

- A. Bar Charts: Include a separate bar for each major portion of Work or operation.
- B. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
- C. Sheet Size: Multiples of 8-1/2 x 11 inches.
- D. Scale and Spacing: To allow for notations and revisions.

### **3.05 SUBMITTALS FOR REVIEW AND INFORMATION**

- A. When the following construction submittals are required by individual sections, submit them to Architect for review:
1. Product data.
  2. Design data.
  3. Shop drawings.
- B. Architect's review is for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

**3.06 SUBMITTALS FOR PROJECT CLOSEOUT**

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. Submit for Johnson County, Iowa's benefit during and after project completion.

**3.07 NUMBER OF COPIES OF SUBMITTALS**

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Documents for Project Closeout: Make one reproduction of original documents. Submit one extra of submittals for information.
- C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
  - 1. After review, produce duplicates.
  - 2. Retained samples will not be returned to Contractor unless specifically so stated.

**3.08 SUBMITTAL PROCEDURES - GENERAL**

- A. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
- B. Schedule submittals to expedite the Project, and coordinate submission of related items.
- C. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
- D. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- E. Submittals not requested will not be recognized or processed.

**END OF SECTION**

## **SECTION 01 4000 - QUALITY REQUIREMENTS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Administrative and procedural requirements for Contractor's Quality Assurance (QA) and Quality Control (QC) programs.
- B. Definitions.
- C. Submittals.
- D. References and standards.
- E. Testing and inspection agencies and services.
- F. Control of installation.
- G. Tolerances.
- H. Defect Assessment.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 01 3000 - Administrative Requirements: Submittal procedures.
- B. Section 01 6000 - Product Requirements: Requirements for material and product quality.

#### **1.03 DEFINITIONS**

- A. Authority Having Jurisdiction (AHJ): Agency or individual officially empowered to enforce the building, fire, and life safety code requirements of the permitting jurisdiction in which the Project is located.
- B. Quality Assurance (QA) Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements of the Contract Documents.
- C. Quality Control (QC) Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements of the Contract Documents. QC services do not include contract enforcement activities performed by Architect.
- D. Installer or Applicator: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, application, and similar operations.
  - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- E. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of Authorities Having Jurisdiction (AHJ) and with the qualification requirements of individual specification Section governing their Work.
- F. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.

- B. Contractor's QA and QC Plans: Submit plans prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's QA and QC responsibilities. Coordinate with Contractor's construction schedule.
- C. Design Data: Submit for Architect's knowledge as Contract Administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the Contract Documents, or for Johnson County, Iowa's information.
- D. Certificates: When specified in individual specification Sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
  - 1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
  - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- E. Manufacturer's Instructions: When specified in individual specification Sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Johnson County, Iowa's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- F. Manufacturer's Field Reports: Submit reports for Architect's benefit as Contract Administrator or for Johnson County, Iowa.
  - 1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the Contract Documents.

#### **1.05 REFERENCES AND STANDARDS**

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes or the Contract Documents.
- B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification Sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific Work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- F. Where referenced standards in individual specification Sections are listed, the references included in those reference standards shall be incorporated into these specifications as if specifically listed.
- G. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

#### **1.06 TESTING AND INSPECTION AGENCIES AND SERVICES**

- A. Contractor shall employ and pay for services of an independent testing agency to perform specified testing and inspection.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- C. Contractor Employed Agency:
  - 1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM E699, ASTM C1021, ASTM C1077, ASTM C1093, and ASTM D3740.
  - 2. Laboratory: Authorized to operate in Iowa.



3. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
4. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

## **PART 2 PRODUCTS - NOT USED**

## **PART 3 EXECUTION**

### **3.01 CONTROL OF INSTALLATION**

- A. Monitor QC over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have Work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

### **3.02 TOLERANCES**

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

### **3.03 TESTING AND INSPECTION**

- A. Testing Agency Duties:
  1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
  2. Perform specified sampling and testing of products in accordance with specified standards.
  3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
  4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
  5. Perform additional tests and inspections required by Architect.
  6. Submit reports of all tests/inspections specified.
- B. Limits on Testing/Inspection Agency Authority:
  1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
  2. Agency may not approve or accept any portion of the Work.
  3. Agency may not assume any duties of Contractor.
  4. Agency has no authority to stop the Work.
- C. Contractor Responsibilities:
  1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
  2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
  3. Provide incidental labor and facilities:

- a. To provide access to Work to be tested/inspected.
- b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
- c. To facilitate tests/inspections.
- d. To provide storage and curing of test samples.
- 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
- 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- 6. Arrange with Johnson County, Iowa's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- D. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect. Costs associate with re-testing shall be paid for by Contractor by deducting testing charges from the Contract Sum by Change Order.
- E. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

### **3.04 DEFECT ASSESSMENT**

- A. Replace Work or portions of the Work not conforming to specified requirements.

**END OF SECTION**

## **SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Temporary Controls: Barriers, enclosures, and fencing.
- B. Security requirements.
- C. Vehicular access and parking.
- D. Waste removal facilities and services.

#### **1.02 TEMPORARY UTILITIES**

- A. Johnson County, Iowa will provide electrical power, consisting of connection to existing facilities.
  - 1. Water supply, consisting of connection to existing facilities.

#### **1.03 BARRIERS**

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.
- C. Provide walk-off mats at access points into construction areas.

#### **1.04 EXTERIOR ENCLOSURES**

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

#### **1.05 INTERIOR ENCLOSURES**

- A. Provide temporary partitions to separate work areas from Johnson County, Iowa-occupied areas, to prevent penetration of dust and moisture into Johnson County, Iowa-occupied areas, and to prevent damage to existing materials and equipment.
- B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:

#### **1.06 SECURITY**

- A. Provide security and facilities to protect Work, existing facilities, and Johnson County, Iowa's operations from unauthorized entry, vandalism, or theft.
- B. Coordinate with Johnson County, Iowa's security program.

#### **1.07 VEHICULAR ACCESS AND PARKING**

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and Johnson County, Iowa.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Existing on-street parking areas may be used for construction parking.

#### **1.08 WASTE REMOVAL**

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site periodically.

- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

**1.09 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS**

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

## **SECTION 01 6000 - PRODUCT REQUIREMENTS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. General product requirements.
- B. Transportation, handling, storage and protection.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 01 4000 - Quality Requirements: Product quality monitoring.

#### **1.03 DEFINITIONS**

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
  - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
  - 2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
  - 3. Comparable Products: Items that are demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
- C. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
- D. Hazardous Substances Prohibited by Law: Including, but not limited to, any product, material, element, constituent, chemical, substance, compound, or mixture, which is defined in, included under, or regulated by any environmental laws.
- E. Environmental Laws: Applicable local, state, and federal laws, rules, ordinances, codes, regulations, and requirements in effect at the time Contractor's services are rendered.
- F. Post-Bid Substitution Requests: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by Contractor after award of Contract are considered "Post-Bid Substitution Requests." The following are not considered post-bid substitution requests:
  - 1. Revisions to Contract Documents requested by Owner or Architect.
  - 2. Specified options of products and construction methods included in Contract Documents.
  - 3. Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

#### **1.04 SUBMITTALS**

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

### **1.05 QUALITY ASSURANCE**

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products or materials for use on Project, product or material selected shall be compatible with products or materials previously selected, even if previously selected products or materials were also options.
- B. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two copies to the Architect.
  - 1. Maintain one set of complete instructions at the job site during installation and until completion.
- C. Compliance: Contractor shall take whatever measures deemed necessary to ensure that all employees, suppliers, vendors, fabricators, subcontractors, or their assigns, to comply with hazardous substance requirements.

### **1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING**

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

### **1.07 PRODUCT AND MATERIAL WARRANTIES**

- A. General: Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. General Warranty: Special warranties specified in each Section 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.
- C. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
  - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  - 2. Refer to Divisions 02 through 49 Sections for specific content requirements and particular requirements for submitting special warranties.
- D. Submittal Time: Comply with requirements in Section 01 7700 - Closeout Procedures.

## **PART 2 PRODUCTS**

### **2.01 PRODUCT SELECTIONS**

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, that are new at time of installation.
  - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  - 2. If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  - 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
  - 4. Where products are accompanied by the term "as selected," Architect will make selection.
  - 5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
  - 6. Products and materials brought onto the Project Site, and products and materials incorporated into the Work, shall comply with environmental laws.
- B. Descriptive Specification Requirements: Where Specifications describe a product, or assembly, listing exact characteristics required, without use of a brand or trade name, provide a product, material or assembly that provides the characteristics and otherwise complies with Contract requirements.
- C. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product or material is specified for a specific application.
  - 1. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.
- D. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with imposed code, standard, or regulation, select product that complies with standards, codes, or regulations specified.

### **2.02 PRODUCT OPTIONS**

- A. Basis of Design (Product Standard) Specification: Where a specific manufacturer's product is named and accompanied by the words "Basis of Design," including make or model number or other designation, it is intended to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.
- B. Other named manufacturers listed as "Acceptable Manufacturers" or "Other Acceptable Manufacturers" have been listed because they have implied compliance with requirements of the "Basis of Design" manufacturer and product. Listed "Acceptable Manufacturers" or "Other Acceptable Manufacturers" are not considered "Substitutions," and therefore, are not required to be submitted as such. However, costs, including professional service fees for changes or modifications to adjacent, contiguous, surrounding, supporting, or otherwise related areas, portions or parts of Project which are required to accommodate products and materials of "Acceptable Manufacturers" or "Other Acceptable Manufacturers" for complete, proper and functional installation, in lieu of specified "Basis of Design" manufacturer and product shall be borne or paid by Contractor.
- C. For products specified by naming several "Manufacturers" or "Acceptable Manufacturers," select one of the products or manufacturers named, which comply with the Contract Documents. Requests for manufacturer's products not listed must be submitted as "Substitutions."
- D. For products specified by naming only one product or manufacturer, Contractor must submit request as for substitutions for products or manufacturers not specifically named.

- E. For products specified by naming only one product and manufacturer and indicated as "No Substitutions," there is no option.
- F. For products specified only by reference standard, select any product meeting that standard.

### **2.03 NEW PRODUCTS**

- A. Provide new products unless specifically required or permitted by the Contract Documents.
- B. DO NOT USE products having any of the following characteristics:
  - 1. Made using or containing CFC's or HCFC's.
  - 2. Made of wood from newly cut old growth timber.
- C. Where all other criteria are met, Contractor shall give preference to products that:
  - 1. If used on interior, have lower emissions, as defined in Section 01 6116.
  - 2. If wet-applied, have lower VOC content, as defined in Section 01 6116.
  - 3. Are extracted, harvested, and/or manufactured closer to the location of the project.
  - 4. Have longer documented life span under normal use.
  - 5. Result in less construction waste.
  - 6. Are made of vegetable materials that are rapidly renewable.
  - 7. Have a published GreenScreen Chemical Hazard Analysis.

## **PART 3 EXECUTION**

### **3.01 TRANSPORTATION AND HANDLING**

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

### **3.02 STORAGE AND PROTECTION**

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Provide off-site storage and protection when site does not permit on-site storage or protection.
- G. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- H. Comply with manufacturer's warranty conditions, if any.



- I. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- J. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- K. Prevent contact with material that may cause corrosion, discoloration, or staining.
- L. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- M. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

### **3.03 GENERAL INSTALLATION PROVISIONS**

- A. Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- B. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
- C. Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.
- D. Recheck measurements and dimensions, before starting each installation.
- E. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible product or material as necessary to prevent deterioration.
- F. Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.
- G. Handle, install, connect, clean, condition, and adjust products and materials in accordance with manufacturer's instructions and in conformity with specified requirements.
  - 1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with manufacturer for further instructions.
  - 2. Do not proceed with work without clear instructions.
- H. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.
- I. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

### **3.04 RESTRICTION OF HAZARDOUS SUBSTANCES**

- A. Contractor agrees that it shall not knowingly after reasonable diligence and effort, incorporate into the Work any hazardous substance other than as may be lawfully contained within products, except in accordance with applicable environmental laws. Further, in performing any of its obligations hereunder, Contractor shall not cause any release of hazardous substances into, or contamination of, the environment, including soil, the atmosphere, any watercourse or ground water, except in accordance with applicable environmental laws. In the event that Contractor engages in any of the activities prohibited in this paragraph, to the fullest extent permitted by law, Contractor hereby indemnifies and holds harmless Owner and its partners, members, officers, directors, agents, employees and consultants from and against any and all claims, damages, losses, causes of action, suits and liabilities of every kind, including, but not limited to, expenses of litigation, court costs, punitive damages, and attorney's fees arising out of, incidental to or resulting from the activities prohibited.
- B. In the event Contractor observes on the Project Site any substance which Contractor reasonably believes to be a hazardous substance, and which is being introduced into the Work or exists on the Project Site in a manner violative of any applicable environmental laws, Contractor shall immediately notify Owner and report the condition to Owner in writing. The

Work in the affected area shall not thereafter be resumed except by written authorization of Owner if in fact a hazardous substance has been encountered and has not been rendered harmless. In the event that Contractor fails to give Owner proper notification hereunder, upon knowingly observing a hazardous substance at the Project Site, to the fullest extent permitted by the law, Contractor hereby indemnifies and holds harmless Owner, and all of its partners, members, officers, directors, agents, employees and consultants from and against all claims, damages, losses, causes of action, suits and liabilities of every kind, including, but not limited to, expenses of litigation, court costs, punitive damages, and attorneys' fees arising out of, incidental to, or resulting from Contractor's failure to stop the Work.

- C. If Owner believes that hazardous substances may have been located, generated, manufactured, used, or disposed of on or about the Project Site by Contractor or any of its employees, agents, subcontractors, suppliers, or invitees, Owner may have environmental studies of the Project Site conducted as it deems appropriate, and Contractor shall be responsible for the cost of such studies to the extent that Contractor or any of its employees, agents, subcontractors, suppliers or invitees are responsible for the presence of any hazardous substances.

**END OF SECTION**

## **SECTION 01 7300 - EXECUTION REQUIREMENTS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Examination, preparation, and general installation procedures.
- B. Cutting and patching.
- C. Cleaning and protection.
- D. Starting of systems and equipment.

#### **1.02 DEFINITIONS**

- A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

#### **1.03 RELATED SECTIONS**

- A. Section 01 4000 - Quality Requirements.
- B. Section 01 5000 - Temporary Facilities and Controls.
- C. Section 02 4100 - Selective Demolition.
- D. Individual Product Specification Sections: Advance notification to other Sections of openings required in work of those Sections.

#### **1.04 SUBMITTALS**

- A. Cutting and Patching: Submit written request in advance of cutting or alteration which affects:
  - 1. Structural integrity of any element of Project.
  - 2. Integrity of weather exposed or moisture-resistant element.
  - 3. Efficiency, maintenance, or safety of any operational element.
  - 4. Visual qualities of sight exposed elements.
- B. Project Record Documents: Accurately record actual locations of capped and active utilities.

#### **1.05 PROJECT CONDITIONS**

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Provide temporary facilities/systems for conditioning interior spaces as required by Work progress
  - 1. Curing of Concrete Slabs: Refer to Division 03 Sections for additional requirements.
    - a. Concrete slabs shall be properly cured and at least 45 days old before beginning aggressive drying.
    - b. During slab drying, maintain relative humidity below 40 percent with a humidity ratio below 30 grains per lb of air.
- C. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere.
- D. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
- E. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

#### **1.06 COORDINATION**

- A. See Section 01 1000 - Summary for occupancy-related requirements.

- B. Coordinate scheduling, submittals, and work of the various Specification Sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.
- C. Notify affected utility companies and comply with their requirements.
- D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various Specification Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- E. Coordinate space requirements, supports, and installation of mechanical and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- G. Coordinate completion and clean-up of work of separate Specification Sections.
- H. After Johnson County, Iowa occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Johnson County, Iowa's activities.

## **PART 2 PRODUCTS**

### **2.01 PATCHING MATERIALS**

- A. New Materials: As specified in Specification Sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.
- D. Post-Bid Substitutions: For any proposed change in materials, submit request for post-bid substitutions as described in Section 01 6000 - Product Requirements.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Start of Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of Work. Beginning of cutting or patching means acceptance of existing conditions.

### **3.02 PREPARATION**

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.

- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

### **3.03 GENERAL INSTALLATION REQUIREMENTS**

- A. Install products as specified in individual Specification Sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

### **3.04 CUTTING AND PATCHING**

- A. Execute cutting and patching to complete the Work, to uncover Work in order to install improperly sequenced Work, to remove and replace defective or non-conforming Work, to remove samples of installed Work for testing when requested, to provide openings in the Work for penetration of mechanical and electrical Work, to execute patching to complement adjacent Work, and to fit products together to integrate with other Work.
- B. Execute Work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- C. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- D. Cut rigid materials using masonry saw or core drill. Sawcut existing concrete, terrazzo, and masonry for clean straight lines. Pneumatic tools not allowed without prior approval.
- E. Restore Work with new products in accordance with requirements of Contract Documents.
- F. Fit Work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
- H. Make neat transitions. Patch work to match adjacent work in texture and appearance.
- I. Patch or replace surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching Work. Repair substrate prior to patching finish. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.
- J. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
  - 1. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
- K. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

### **3.05 PROGRESS CLEANING**

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

- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

### **3.06 PROTECTION OF INSTALLED WORK**

- A. Protect installed Work from damage by construction operations.
- B. Provide special protection where specified in individual Specification Sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

### **3.07 STARTING SYSTEMS**

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect and owner seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- G. When specified in individual Specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

### **3.08 ADJUSTING**

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

### **3.09 FINAL CLEANING**

- A. Execute final cleaning prior to final project assessment.
  - 1. Clean areas to be occupied by Johnson County, Iowa prior to final completion before Johnson County, Iowa occupancy.
- B. Use cleaning materials that are nonhazardous.
- C. Clean interior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

### **3.10 CLOSEOUT PROCEDURES**

- A. Notify Architect when Work is considered ready for Substantial Completion.

- B. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect's review.
- C. Johnson County, Iowa will occupy all of the existing building as specified in Section 01 1000.
- D. Correct items of Work listed in executed Certificates of Substantial Completion and comply with requirements for access to Johnson County, Iowa-occupied areas.
- E. Notify Architect when Work is considered finally complete.
- F. Complete items of Work determined by Architect's final inspection.

**END OF SECTION**





## **SECTION 02 4100 - SELECTIVE DEMOLITION**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Selective demolition of existing building elements for alteration purposes.

#### **1.02 DEFINITIONS**

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner's designated storage area.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

#### **1.03 RELATED REQUIREMENTS**

- A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 5000 - Temporary Facilities and Controls.

### **PART 2 PRODUCTS -- NOT USED**

### **PART 3 EXECUTION**

#### **3.01 GENERAL DEMOLITION, PROCEDURES, AND PROJECT CONDITIONS**

- A. Comply with applicable codes and regulations for selective demolition operations and safety of adjacent structure and the public.
  - 1. Obtain required permits.
  - 2. Provide, erect, and maintain temporary barriers and security devices.
  - 3. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
  - 4. Conduct operations to minimize effects on and interference with adjacent areas and occupants.
  - 5. 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.
- B. Do not begin removal until receipt of notification to proceed from Johnson County, Iowa.
- C. Protect existing elements that are not to be removed.
- D. Minimize production of dust due to selective demolition operations.
- E. If hazardous materials are discovered during removal operations, stop work and notify Architect and Johnson County, Iowa; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
- F. Perform demolition in a manner that maximizes salvage and recycling of materials.
  - 1. Dismantle existing construction and separate materials.
  - 2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point.

#### **3.02 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.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Johnson County, Iowa.

- 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 local users and Johnson County, Iowa.
- 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.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

### **3.03 SELECTIVE DEMOLITION FOR ALTERATIONS**

- A. Drawings showing existing construction 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. Separate areas in which demolition is being conducted from other areas that are still occupied.
  - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000.
- C. Remove existing work as indicated and as required to accomplish new work.
  - 1. Remove items indicated on drawings.
- D. Services (Including but not limited to HVAC, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
  - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
  - 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.
- E. Protect existing work to remain.
  - 1. Prevent movement of structure; provide shoring and bracing if necessary.
  - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
  - 3. Repair adjacent construction and finishes damaged during removal work.
  - 4. Patch as specified for patching new work.

### **3.04 DEBRIS AND WASTE REMOVAL**

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.
- D. Clean adjacent owner-occupied areas daily.

### **END OF SECTION**

## **SECTION 03 3000 - CAST-IN-PLACE CONCRETE**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Concrete for floor construction.
- B. Concrete reinforcement.
- B. Expanded polystyrene geofoam.
- D. Joint devices associated with concrete work.
- E. Concrete curing.

#### **1.02 REFERENCE STANDARDS**

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- C. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
- D. ACI 302.1R - Guide for Concrete Floor and Slab Construction; 2004 (Errata 2007).
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000.
- F. ACI 305R - Hot Weather Concreting; 2010.
- G. ACI 306R - Cold Weather Concreting; 2010.
- H. ACI 308R - Guide to Curing Concrete; 2001 (Reapproved 2008).
- I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.
- J. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement; 2015.
- K. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2013.
- L. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2015a.
- M. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2015.
- N. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2013.
- O. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2012.
- P. ASTM C150/C150M - Standard Specification for Portland Cement; 2015.
- Q. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2007.
- R. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
- S. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2013.
- T. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.
- U. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2014.
- V. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 1996 (Reapproved 2008).
- W. ASTM E 1155M - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers [Metric]; 1996 (Reapproved 2008).

#### **1.03 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate the installation of foam and concrete with size, location and installation of service utilities.

- B. Preinstallation Meeting: Conduct a preinstallation meeting at least one weeks prior to the start of the work of this section; require attendance of concrete producer and all affected installers. Review satisfactory jobsite conditions, design mixes and field quality control requirements.
- C. Sequencing: Ensure that under-slab utility connections are achieved in an orderly and expeditious manner.
- D. Scheduling: Coordinate with owner's occupancy schedule.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 – Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
- C. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.
- D. Proposed Mix Design(s): Material proportions for each class of concrete; indicate compressive strength development at 7, 28, and 90 days; indicate alkalinity (pH) of hardened concrete sample at 90 days.
  - 1. Develop time-temperature-strength relationship for each design mix to be used in evaluating early-age compressive strength.
- E. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

#### **1.06 QUALITY ASSURANCE**

- A. Perform work of this section in accordance with ACI 301 and ACI 318, current editions.
- B. Acquire cement from same source and aggregate from same source for entire project.
- C. Follow recommendations of ACI 305R when concreting during hot weather.
  - 1. Take precautions to minimize plastic shrinkage cracking. Do not place concrete when the following conditions are anticipated unless proper precautions are taken:
    - a. Wind velocity in excess of 15 mph.
    - b. Low relative humidity (less than 40 percent).
    - c. High ambient or concrete temperatures.
- D. Follow recommendations of ACI 306R when concreting during cold weather.
- E. Concrete Finisher Qualifications: At least two individuals performing the work of this section with minimum three years of documented experience and ACI certified.

### **PART 2 PRODUCTS**

#### **2.01 REINFORCEMENT**

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
  - 1. Type: Deformed billet-steel bars.
  - 2. Finish: Unfinished, unless otherwise indicated.
- B. Reinforcement Accessories:
  - 1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.
  - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

#### **2.02 CONCRETE MATERIALS**

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
  - 1. Acquire cement for entire project from same source.
- B. Blended Hydraulic Cement (Contractor's Option): ASTM C595M, Type IS (20) - Slag-Modified Portland Cement.
- C. Fine and Coarse Aggregates: ASTM C 33.
  - 1. Acquire aggregates for entire project from same source.

- D. Fly Ash: ASTM C618, Class C.
- E. Granulated Blast-Furnace Slag: ASTM C989, Grade 100.
  - 1. Acceptable products:
    - a. GranCem cement manufactured by Holcim Inc.
    - b. NewCem cement manufactured by Lafarge.
- F. Water: Clean and not detrimental to concrete.

## **2.03 ADMIXTURES**

- A. Chemical Admixture Manufacturers:
  - 1. BASF Corporation - Admixture Systems: [www.basf-admixtures.com](http://www.basf-admixtures.com).
  - 2. The Euclid Chemical Company: [www.euclidchemical.com](http://www.euclidchemical.com).
  - 3. Grace Construction Products: [www.na.graceconstruction.com](http://www.na.graceconstruction.com).
  - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- C. Air Entrainment Admixture: ASTM C260/C260M.
  - 1. Provide products from same manufacturer as other admixtures used.
  - 2. Provide air entrainment as specified in Table 4.2.1 and Table 4.4.1 of ACI 318-99 in concrete exposed to freezing and thawing. Limit entrained air to 3 percent in interior concrete scheduled for steel troweled finish.
  - 3. Manufacturers:
    - a. Air Mix or AEA-92 manufactured by The Euclid Chemical Company.
    - b. Darex or Daravair manufactured by Grace Construction Products.
    - c. MB-AE 90, MB-VR or Micro Air manufactured by BASF Corporation - Admixture Systems.
    - d. Substitutions: See Section 01 6000 - Product Requirements.
- D. High Range Water Reducing Admixture (Superplasticizers): ASTM C 494/C 494M Type F.
  - 1. Manufacturers:
    - a. Eucon 37 or Plastol Series manufactured by The Euclid Chemical Company.
    - b. Daracem or Adva Series manufactured by Grace Construction Products.
    - c. Glenium Series or Rheobuild 1000 manufactured by BASF Corporation - Admixture Systems.
    - d. Substitutions: See Section 01 6000 - Product Requirements.
- E. Water Reducing Admixture: ASTM C494/C494M Type A.
  - 1. Manufacturers:
    - a. Eucon Series manufactured by The Euclid Chemical Company.
    - b. WRDA Hycol manufactured by Grace Construction Products.
    - c. Pozzolith Series or PolyHeed Series manufactured by BASF Corporation - Admixture Systems.
    - d. Substitutions: See Section 01 6000 - Product Requirements.

## **2.04 ACCESSORY MATERIALS**

- A. Bonding Agent: ASTM C 1059, Type II acrylic non-redispersable type.
  - 1. Acceptable Products:
    - a. Flexcon or Akkro 7T manufactured by The Euclid Chemical Company.
    - b. Daraweld manufactured by Grace Construction Products.
    - c. Sika Latex manufactured by Sika Corp.
- B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
  - 1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
  - 2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.
  - 3. Flowable Products:
    - a. Euco NS or Tamms NC Grout manufactured by The Euclid Chemical Company.

- b. Five Star Grout manufactured by U.S. Grout Company.
  - c. Masterflow 928 manufactured by BASF Corporation - Master Builders.
  - d. Sure Grip Grout manufactured by Dayton Superior.
  - e. Substitutions: See Section 01 6000 - Product Requirements.
- C. Expanded Polystyrene Geofoam
  - 1. EPS22: 1.5lb, Type II in accordance with ASTM D6817.
    - a. Minimum Density: 1.35 pounds per cubic foot.
    - b. Minimum compressive resistance @ 1% deformation of 7.3 psi, 1,050 psf.
    - c. Minimum flexural strength of 35.0 psi.
    - d. Water absorption, maximum total immersion: 3 percent.
    - e. Oxygen index: 24.0 percent.
  - 2. Connector plates: Manufacturer's recommended galvanized steel plate with two-sided multi-barbed design capable of piercing geofoam. Each plate shall be capable of a minimum lateral holding strength of 60 lbs.

## **2.05 BONDING AND JOINTING PRODUCTS**

- A. Epoxy Bonding System:
  - 1. Complying with ASTM C881/C881M and of Type required for specific application.

## **2.06 CURING MATERIALS**

- A. Moisture-Retaining Sheet: ASTM C171.
  - 1. White-burlap-polyethylene sheet, weighing not less than 10 ounces per linear yard, 40 inches wide.
- B. Water: Potable, not detrimental to concrete.

## **2.07 CONCRETE MIX DESIGN**

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
  - 1. Cementitious Materials Content: Minimum 525 lb per cubic yard.
  - 2. Replace as much portland cement as possible with fly ash and ground granulated blast furnace slag as is consistent with ACI recommendations.
  - 3. Ternary Mix Design: Provide up to 35 percent of required cementitious materials content using fly ash and slag as follows:
    - a. Fly Ash Content: Minimum 15 percent of cementitious materials by weight.
    - b. Granulated Blast-Furnace Slag Content: Maximum 20 percent of cementitious materials by weight.
  - 4. Ratio of Water to Cementitious Materials (percent by weight):
    - a. Footings and Foundation Walls: Maximum 50 percent.
    - b. Interior Floor Slabs (water reducing admixture): Maximum 45 percent.
    - c. Exterior Paving (water reducing admixture): Maximum 45 percent.
  - 5. Aggregate Size:
    - a. Footings and Foundation Walls: 1 inch, maximum.
    - b. Floor Slabs: 3/4 inch, maximum.
    - c. Floor Toppings with depth less than 2-1/2 inches: 1/2 inch, maximum.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
  - 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
  - 2. The Project structural design is based on cast-in-place concrete components with 4000 psi minimum compressive strength except as specifically required otherwise.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
  - 1. Total Air Content: Determined in accordance with ASTM C173/C173M.
  - 2. Water Reducing Admixture: Provide mid-range water-reducing admixture allowing 12-15 percent reduction of water content in concrete mix for interior floor slabs.

## **2.08 MIXING**

- A. Transit Mixers: Comply with ASTM C 94/C 94M; 1-1/2 hour maximum mixing and delivery time.
  - 1. When air temperature is above 90 degrees F, reduce maximum mixing and delivery time to 60 minutes.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify lines, levels, and dimensions before proceeding with work of this section.
- B. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

### **3.02 PREPARATION**

- A. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- B. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and epoxy.

### **3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS**

- A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

### **3.04 PLACING CONCRETE**

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete floor slabs in accordance with ACI 302.1R; comply with requirements for "flat" floors.
- C. Notify Architect not less than 24 hours prior to commencement of placement operations.
- D. Ensure reinforcement, inserts, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- E. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

### **3.05 SLAB JOINTING**

- A. Locate joints as indicated on drawings.
- B. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.
- C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- D. Place concrete continuously.
- E. Do not interrupt successive placement; do not permit cold joints to occur.
- F. Place floor slabs in accordance with construction joint pattern indicated.
- G. Saw cut contraction joints within 24 hours after placing. Use 1/8 inch thick blade, cut into 1/3 depth of slab thickness.
- H. Provide flat floors, maintaining the following minimum F(F) Floor Flatness and F(L) Floor Levelness values when measured in accordance with ASTM E 1155/ASTM E 1155M.
  - 1. F(F): Specified Overall Value (SOV) of 50; Minimum Localized Value (MLV) of 30.
  - 2. F(L): Specified Overall Value (SOV) of 30; Minimum Localized Value (MLV) of 20.
  - 3. Remedy for out-of-tolerance work for "Random Traffic" floor sections:
    - a. Remove and replace floor sections measuring below either (or both) of the specified Minimum Local F-Numbers. Floor sections are generally defined rectangular areas of approximately 600 sq ft, minimum.

- b. Should the Owner determine that replacement of out-of-tolerance work is impractical, the Contractor shall rebate to the Owner an amount equal to:
  - 1) \$5.00 x (Total balance of sq ft measuring below F(f) 30) or
  - 2) \$5.00 x (Total balance of sq ft measuring below F(l) 20), whichever is more.

### 3.06 CONCRETE FINISHING

- A. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
  - 1. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 302.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, resinous matrix terrazzo, thin set quarry tile, and thin set ceramic tile.

### 3.07 CURING

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
  - 1. Normal concrete: Not less than 7 days.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
  - 1. If Architect permits removal of forms after 3 days, cure surfaces in accordance with ACI 308; begin immediately upon removal of forms.
    - a. Spraying: Spray water over surfaces and maintain wet for 7 days.
    - b. Membrane Curing Compound: Apply compound in accordance with manufacturer's instructions in two coats, with second coat applied at right angles to first.
      - 1) Exception: Do not apply compound to surfaces scheduled to receive subsequent application of waterproofing and finish coating materials.
- D. Floor Surfaces Scheduled to Receive Adhered Floor Coverings:
  - 1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water-fog spray or saturated burlap.
  - 2. Final Curing: Continue moisture curing after initial curing; do not permit surface to dry.
    - a. Maintain moisture-retaining cover in place for minimum 14 days. Seal in place with waterproof tape.
  - 3. Drying: During the construction period, provide field conditions which permit floor slabs to become dry enough for satisfactory installation of specified finish floor materials.
    - a. Flooring and adhesive manufacturers generally require that water vapor emission rates at the time of flooring installation not exceed 3-5 lbs per 1000 sq ft in a 24 hr period when tested in accordance with ASTM F1869 (calcium chloride test). Relative humidity shall not exceed 75 percent when tested in accordance with ASTM F2170.
    - b. Make field tests to verify satisfactory conditions at least 60 days prior to starting installation of adhered flooring materials. Submit written report indicating test results.

### 3.08 PROTECTION

- A. Do not permit superimposed loads to be applied to concrete components until at least 75 percent of minimum design compressive strength has been achieved.
  - 1. Use maturity methods for estimating in-place compressive strength of early-age concrete (less than 14 days from placement). Record maturity measurements made on-site.
- B. Take appropriate precautions to prevent staining of concrete floor surfaces. Since no satisfactory procedures are available to remove petroleum and rust stains from concrete, comply with the following:
  - 1. Cover and protect floor surfaces from damage and staining during the construction period.
  - 2. Ensure that construction equipment, particularly components that may drip oil, hydraulic fluid, and other liquids, are provided with suitable diaper.
  - 3. In addition to diaper, equipment such as pipe cutting machines shall be placed on suitable drop cloths.
  - 4. Do not permit temporary placement and storage of steel members on concrete slabs.



### **3.09 FIELD QUALITY CONTROL**

- A. Provide an independent testing agency to perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Contractor shall submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Testing agency may perform tests of concrete and concrete materials at any time to ensure conformance with specified requirements.
- E. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.
- F. Break one cylinder at 14 days and the remaining two cylinders at 28 days.
- G. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- H. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

### **3.10 DEFECTIVE CONCRETE**

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

### **3.11 PROTECTION**

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

**END OF SECTION**

Neumann Monson Architects  
18.112

Johnson County Courthouse  
Iowa City, IA

CAST-IN-PLACE CONCRETE  
03 3000 - 8

## **SECTION 06 1000 – ROUGH CARPENTRY**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Non-structural dimension lumber framing.
- B. Rough opening framing for doors.
- C. Fire retardant treated wood materials.
- D. Concealed wood blocking, nailers, and supports.

#### **1.02 REFERENCE STANDARDS**

- A. AFPA (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; American Forest and Paper Association; 2001.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2010b.
- D. AWPA C20 - Structural Lumber -- Fire Retardant Treatment by Pressure Processes; American Wood-Protection Association; 2003.
- E. AWPA C27 - Plywood -- Fire-Retardant Treatment by Pressure Processes; American Wood-Protection Association; 2002.
- F. AWPA U1 - Use Category System: User Specification for Treated Wood; American Wood Protection Association; 2010.
- G. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

#### **1.03 DELIVERY, STORAGE, AND HANDLING**

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

### **PART 2 PRODUCTS**

#### **2.01 GENERAL REQUIREMENTS**

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
  - 1. Species: Douglas Fir-Larch, for structural framing.
  - 2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
  - 3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee ([www.alsc.org](http://www.alsc.org)) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
  - 4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.
- B. Lumber fabricated from old growth timber is not permitted.

#### **2.02 DIMENSION LUMBER**

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.
- C. Stud Framing (2 by 2 through 2 by 6 ):
  - 1. Grade: No. 3 or Stud.

- D. Miscellaneous Blocking and Nailers:
  - 1. Lumber: S4S, No. 2 or Standard Grade.

### **2.03 ACCESSORIES**

- A. Fasteners and Anchors:
  - 1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
  - 2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.

### **2.04 FACTORY WOOD TREATMENT**

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
  - 1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
- B. Fire Retardant Treatment:
  - 1. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
    - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
    - b. Treat rough carpentry items as indicated .
    - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION - GENERAL**

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

### **3.02 FRAMING INSTALLATION**

- A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
- B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- C. Install structural members full length without splices unless otherwise specifically detailed.
- D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AFPA Wood Frame Construction Manual.
- E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.
- F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.
- G. Provide bridging at joists in excess of 8 feet span as detailed. Fit solid blocking at ends of members.
- H. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

### **3.03 BLOCKING, NAILERS, AND SUPPORTS**

- A. Provide framing and blocking members as indicated or as required.
- B. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

### **3.04 TOLERANCES**

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

### **3.05 CLEANING**

- A. Waste Disposal: Comply with the requirements of Section 01 7419.
  - 1. Comply with applicable regulations.
  - 2. Do not burn scrap on project site.
  - 3. Do not burn scraps that have been pressure treated.
  - 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

**END OF SECTION**



## **SECTION 06 4100 - ARCHITECTURAL WOODWORK**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Solid wood trim.
- B. Panel materials.
- C. Accessories.
- D. Factory/shop finishing of specific woodwork items.
- E. Preparation for site finishing of specific woodwork items.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 06 1000 - Rough Carpentry: Concealed support framing, blocking, and subflooring panels.
- B. Section 09 9123 - Interior Painting and Staining: Field finishing of specific components of architectural woodwork.

#### **1.03 REFERENCE STANDARDS**

- A. 2010 ADA Standards for Accessible Design- US DoJ Rev. Regulations for Titles II and III, Americans with Disabilities Act of 1990 as adopted by Iowa State Building Code 661—302.1
- B. ANSI A208.1 - American National Standard for Particleboard; 2009.
- C. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2009.
- D. ASTM F1233 - Standard Test Method for Security Glazing Materials And Systems; 2008 (2013).
- E. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- F. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2009.
- G. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative 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. Specimen warranty.
  - 4. Hardware and accessories.
- C. Shop Drawings: Complete details of materials and installation; indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location, and schedule of finishes.

#### **1.05 QUALITY ASSURANCE**

- A. Manufacturer/Fabricator Qualifications: Company specializing in manufacturing/fabricating the products specified in this Section, with minimum 5 years of documented experience.
- B. Perform work in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Premium quality.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Protect units from moisture damage.
- B. Do not deliver woodwork until painting, finishing, and overhead Work is complete in the space to receive woodwork.

## **1.07 FIELD CONDITIONS**

- A. During and after installation of Work specified in this Section, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.
- B. Field Measurements: Where woodwork is indicated to fit to other construction, verify actual dimensions of other construction by accurate field measurements before fabrication of woodwork; and indicate measurements on final Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
  - 1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on Shop Drawings.
  - 2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

## **PART 2 PRODUCTS**

### **2.01 ARCHITECTURAL WOODWORK**

- A. Quality Grade: Unless otherwise indicated, provide products of quality specified by AWI//AWMAC/WI (AWS) for Premium Grade.
- B. Solid Wood Trim at Modesty wall: Grade AA, Red Oak, rift cut and comb grain; in sizes and profiles as indicated on Drawings. Factory/shop finished to match adjacent millwork.
- C. Solid Wood Trim at Door Casings, Door Thresholds, and Wood Base at Walls: Grade AA, Red Oak, rift cut and comb grain; in sizes and profiles to match existing. Field finished to match adjacent wood trim.

### **2.02 WOOD-BASED COMPONENTS**

- A. Wood fabricated from old growth timber is not permitted.

### **2.03 PANEL MATERIALS**

- A. Medium Density Fiberboard (MDF) Core: ANSI A208.2; type as specified in AWS; composed of wood fibers pressure bonded with moisture resistant adhesive to suit application; sanded faces.
  - 1. No added urea-formaldehyde binder permitted.
- B. Plywood Core: NIST PS 1, Interior rated adhesives, core of wood plies from listed species unless otherwise indicated, thickness as indicated or as required by application.

### **2.04 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.

### **2.05 FABRICATION**

- A. Assembly: Shop assemble millwork 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. Matching Wood Grain: Comply with requirements of quality standard for specified Grade exclusively.
- D. Provide cutouts for outlet boxes and fixtures and fittings. Verify locations of cutouts from on-site dimensions. Seal cut edges.



## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with Work of this Section.

### **3.02 INSTALLATION**

- A. Set and secure woodwork in place, assuring that they are rigid, plumb, and level.
- B. Use concealed joint fasteners to align and secure adjoining work.
- C. Carefully scribe millwork abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- D. Secure vanity wall to floor using appropriate angles and anchorages.
- E. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

### **3.03 CLEANING**

- A. Clean millwork, cabinets, counters, hardware, fittings, and fixtures.

### **3.04 FIELD FINISHING**

- A. Field-Applied Finish: Transparent finish as specified in Section 09 9123.
  - 1. Provide field-applied finishing at Vanity Wall top trim, Wood Base at Walls, and refinished Wood Trim at Door Frames and Casings.

**END OF SECTION**



## **SECTION 07 9200 - JOINT SEALANTS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Nonsag gunnable joint sealants.
- B. Joint backings and accessories.

#### **1.02 REFERENCE STANDARDS**

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2006 (Reapproved 2011).
- B. ASTM C834 - Standard Specification for Latex Sealants; 2014.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.
- E. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.

#### **1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative 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.
- 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**

#### **2.01 JOINT SEALANT APPLICATIONS**

- A. Scope:
  - 1. Interior Joints: 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. Other joints indicated below.
  - 2. Do not seal the following types of joints.
    - a. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
    - b. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
    - c. Joints where installation of sealant is specified in another section.
    - d. Joints between suspended panel ceilings/grid and walls.
- B. Interior Joints: Use non-sag acrylic emulsion latex sealant, unless otherwise indicated.
  - 1. Type F - Floor Joints Where Tamper-Resistance is Required: Non-sag tamper-resistant silyl-terminated polyurethane sealant.

#### **2.02 JOINT SEALANTS - GENERAL**

- A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

## **2.03 NONSAG JOINT SEALANTS**

- A. Type F - Tamper-Resistant, Silyl-Terminated Polyurethane (STPU) Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.
  - 1. Movement Capability: Plus and minus 12-1/2 percent, minimum
  - 2. Hardness Range: 25 to 30, Shore A, when tested in accordance with ASTM C661.
  - 3. Color: To be selected by Architect from manufacturer's standard range.
- B. 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.

## **2.04 ACCESSORIES**

- A. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- B. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
- C. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Acceptance of Surfaces and Conditions: Examine substrate surfaces to receive products and systems and associated Work for compliance with requirements and other conditions affecting performance. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents. Starting Work within a particular area will be construed as acceptance of surface conditions.
- B. Verify that joints are ready to receive work.
- C. Verify that backing materials are compatible with sealants.

### **3.02 PREPARATION**

- A. General: Comply with manufacturer's instructions, recommendations, and specifications for cleaning and surface preparation. Surfaces shall have no defects, contaminants, or errors which would result in poor or potentially defective installation or would cause latent defects in Work. Provide smooth and clean substrates, free of dust, dirt, and moisture according to manufacturer's written instructions.
- B. Remove loose materials and foreign matter that could impair adhesion of sealant.
- C. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- D. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- E. 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.

### **3.03 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. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- 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 09 2116 - GYPSUM BOARD ASSEMBLIES**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Metal stud wall framing.
- B. Cement board.
- C. Standard interior paper-faced gypsum board.
- D. Joint treatment and accessories.

#### **1.02 DEFINITIONS**

- A. Gypsum Board Construction Terminology: Refer to ASTM C11 for definitions of terms not defined in this Section or in other referenced quality standards.
- B. Damage: Stored or installed paper-faced gypsum board materials not specifically manufactured as "moisture-resistant products" shall be classified as defective and nonconforming Work if they have been exposed to wetness or dampness at any time prior to Substantial Completion or if they exhibit evidence of active or dormant mold or mildew.

#### **1.03 RELATED REQUIREMENTS**

- A. Section 06 1000 - Rough Carpentry: Wood blocking.
- B. Section 07 9200 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board Work.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate special details associated with conditions.
- C. Product Data: Provide data on gypsum board, accessories, joint finishing system, and cement board.

#### **1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum 5 years of experience.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

### **PART 2 PRODUCTS**

#### **2.01 METAL FRAMING MATERIALS**

- A. Acceptable Manufacturers - Metal Framing, Connectors, and Accessories:
  - 1. California Expanded Metals Co. (CEMCO): [www.cemcosteel.com](http://www.cemcosteel.com).
  - 2. Clark Dietrich Building Systems LLC: [www.clarkdietrich.com](http://www.clarkdietrich.com).
  - 3. USG Corporation; [www.usg.com](http://www.usg.com)
  - 4. Custom Stud, Inc.: [www.customstud.com](http://www.customstud.com).
  - 5. Marino: [www.marinoware.com](http://www.marinoware.com).
  - 6. MBA Building Supplies, Inc: [www.mbastuds.com](http://www.mbastuds.com).
  - 7. Phillips Manufacturing Company: [www.phillipsmfg.com](http://www.phillipsmfg.com).
  - 8. Studco Building Systems: [www.studcosystems.com](http://www.studcosystems.com).
  - 9. Telling Industries: [www.buildstrong.com](http://www.buildstrong.com).
  - 10. The Steel Network, Inc: [www.SteelNetwork.com](http://www.SteelNetwork.com).
  - 11. Substitutions: See Section 01 6000 - Product Requirements.
- B. Non-Loadbearing Wall Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with

maximum deflection of typical wall framing of L/240 at 7.5 psf. Provide maximum deflection of L/360 at 7.5 psf for walls with tile facing.

1. Minimum Metal Thickness: 20 gage (0.039 inch).
    - a. Exception: The minimum metal thickness and section properties requirements of ASTM C645 are waived provided steel of 40 ksi minimum yield strength is used, the metal is continuously dimpled, the effective thickness is at least twice the base metal thickness, and maximum stud heights are determined by testing in accordance with ASTM E72 using assemblies specified by ASTM C754.
  2. Studs: "C" shaped with flat or formed webs with knurled faces.
  3. H-Studs: "H" shaped, 2 inches wide; 25 gage.
  4. Runners: "U" shaped, sized to match studs.
  5. Deflection Channels: Proprietary or non-proprietary deep leg tracks with slotted holes.
  6. Resilient Furring Channels: 1/2 inch depth, for attachment to substrate through one leg only, designed to reduce sound transmission.
- C. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.
1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100-12.
  2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.
  3. Provide components UL-listed for use in UL-listed fire-rated head of partition joint systems of fire rating and movement required.
  4. Deflection and Firestop Track:
    - a. Provide mechanical anchorage devices as described above that accommodate deflection while maintaining the fire-rating of the wall assembly.
    - b. Acceptable Manufacturers and Products:
      - 1) Fire Trak, Inc.; Posi Klip: [www.firetrak.com](http://www.firetrak.com).
      - 2) Fire Trak, Inc.: Redi Klip: [www.firetrak.com](http://www.firetrak.com).
      - 3) Fire Trak, Inc.: Fire Trak: [www.firetrak.com](http://www.firetrak.com).
      - 4) Metal-Lite, Inc.; The System: [www.metal-lite.net](http://www.metal-lite.net).
      - 5) The Steel Network, Inc.; VertiClip or VertiTrack: [www.steelnetwork.com](http://www.steelnetwork.com).
      - 6) Substitutions: See Section 01 6000 - Product Requirements.
  5. Provide top track preassembled with connection devices spaced to fit stud spacing indicated on Drawings; minimum track length of 12 feet.
- D. Framing Accessories: Framing manufacturer's standard connectors, bracings, brackets, clips, gussets, and other framing devices as required by conditions, formed from galvanized sheet steel complying with requirements of main support system.

## 2.02 BOARD MATERIALS

- A. Acceptable Manufacturers - Board Materials:
1. American Gypsum: [www.americangypsum.com](http://www.americangypsum.com).
  2. CertainTeed Corporation: [www.certainteed.com](http://www.certainteed.com).
  3. Georgia-Pacific Gypsum: [www.gpgypsum.com](http://www.gpgypsum.com).
  4. National Gypsum Company: [www.nationalgypsum.com](http://www.nationalgypsum.com).
  5. USG Corporation: [www.usg.com](http://www.usg.com)
  6. Substitutions: See Section 01 6000 - Product Requirements.
- B. Standard Interior Paper-Faced Gypsum Board: Gypsum panels as defined in ASTM C1396/C1396M, Type X; sizes to minimize joints in place; ends square cut.
1. Application: Use for vertical surfaces, unless otherwise indicated.
  2. Thickness: 5/8 inch.
  3. Edges: Tapered.



- C. Cement Board:
  - 1. Application: Surfaces at the perimeter of foam fill and concrete slab.
  - 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
  - 3. Cement-Based Board: Non-gypsum-based, cementitious board complying with ASTM C1288.
    - a. Thickness: 5/8 inch.

## **2.03 ACOUSTIC ACCESSORIES**

- A. Acoustic Insulation: ASTM C665, Type I, Class A; preformed mineral fiber, friction fit type, unfaced.
  - 1. Thickness: Minimum of 3-1/2 inches.
  - 2. Density: Not less than nominal 2.5 pounds per cubic foot.
- B. Acoustic Sealant: ASTM C834; non-sag, paintable, non-staining acrylic emulsion latex or water-based elastomeric sealant that is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E90.

## **2.04 OTHER ACCESSORIES**

- A. Finishing Accessories: ASTM C1047, galvanized steel, rolled zinc, or rigid plastic, unless noted otherwise.
  - 1. Types: As detailed on Drawings or required for finished appearance.
- B. Joint Materials: ASTM C475/C475M.
  - 1. Cement Board: Tape: 2 inch wide, coated glass fiber tape for joints and corners.
  - 2. Gypsum Board: Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
  - 3. Gypsum Board: Ready-mixed vinyl-based joint compound.
  - 4. Cement Board: Type 1 organic adhesive.
- C. Level 5 Finish Accessories: Contractor's option; one of the following:
  - 1. Skim Coat Finish / Surfer: Lightweight joint compound formulated to reduce airborne dust when sanded.
    - a. Basis of Design: ProForm Lite Ready Mix Joint Compound with Dust-Tech manufactured by National Gypsum Company.
  - 2. 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.
    - a. Acceptable Manufacturers and Products:
      - 1) Level V Wall and Ceiling Primer/Surfer manufactured by CertainTeed.
      - 2) Tuff-Hide Primer-Surfer manufactured by USG.
      - 3) Builders Solution Interior Surfer manufactured by Sherwin-Williams.
      - 4) Substitutions: See Section 01 6000 - Product Requirements.
- D. Screws for Attachment to Steel Members Less Than 0.03 inch in Thickness, to Wood Members, and to Gypsum Board: ASTM C1002; self-piercing tapping type; cadmium-plated for exterior locations.
- E. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion resistant.
- F. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that project conditions are appropriate for Work of this Section to commence. Starting Work within a particular area will be construed as acceptance of surface conditions.

### **3.02 FRAMING INSTALLATION**

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions. Isolate gypsum board assemblies from building structure to prevent transfer of loading imposed by structural movement.
- B. Studs: Space studs at 16 inches on center, unless specifically indicated otherwise.
  - 1. Extend partition framing to structure in all locations, except where partitions are indicated to terminate at, or immediately above, suspended ceilings.
    - a. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.
  - 2. Continue stud framing over door frames and openings to provide support for gypsum board.
  - 3. Install studs so that flanges point in same direction. Do not lap studs.
  - 4. At intersections and corners, locate studs no more than 2 inches from partition intersections and corners and secure with screws through both flanges of studs and tracks.
  - 5. Install horizontal bridging at 48 inches on center vertically where indicated or required by installation quality standard.
- C. Openings: Reinforce openings using not less than double studs at jambs. Construct header of appropriate configuration for type of opening to be spanned and secure with clip angles.

### **3.03 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.
  - 1. Place one bead continuously on substrate before installation of perimeter framing members.
  - 2. Place continuous bead at perimeter of each layer of gypsum board.
  - 3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

### **3.04 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. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
  - 1. Exception: Tapered edges to receive joint treatment at right angles to framing.
- C. Cementitious Backing Board: Install over steel framing members and wood framing members where indicated, in accordance with manufacturer's instructions.

### **3.05 INSTALLATION OF TRIM AND ACCESSORIES**

- A. Control Joints: Place control joints consistent with lines of building spaces and as follows:
  - 1. Not more than 30 linear feet apart in walls and ceilings.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

### **3.06 JOINT TREATMENT**

- A. Cement Board Sheathing: Use fiberglass joint tape, bedded and finished with Type 1 organic adhesive.
- B. Paper-Faced Interior Gypsum Board: Use paper joint tape, bedded with ready-mixed vinyl-based joint compound and finished with ready-mixed vinyl-based joint compound.
- C. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:

1. Level 5:
  - a. Walls and ceilings to receive painted finish.
  - b. Other areas specifically indicated.
- D. 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.
- E. Level 5 Finish: Contractor's option; one of the following where Level 5 finish is required.
  1. Apply skim coat of lightweight ready-mix joint compound over entire surface of boards after joints have been properly treated; to achieve a flat and tool mark-free finish.
  2. Spray-apply 2 coats of high-build drywall surfacer over entire surface of boards after joints have been properly treated; to achieve a flat and tool mark-free finish. Back roll after application of each coat.

### **3.07 TOLERANCES**

- A. Maximum Variation of Finished Gypsum Board Surface from true Flatness: 1/8 inch in 10 feet in any direction.

**END OF SECTION**

Neumann Monson Architects  
18.112

Johnson County Courthouse  
Iowa City, IA

## **SECTION 09 5100 - ACOUSTICAL CEILINGS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Suspended metal grid ceiling systems and associated accessories.
- B. Acoustical units.

#### **1.02 REFERENCE STANDARDS**

- A. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2013a.
- B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.
- C. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2014.

#### **1.03 ADMINISTRATIVE REQUIREMENTS**

- A. Do not install acoustical units until after interior wet work is dry.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on suspension system components and acoustical units.

#### **1.05 QUALITY ASSURANCE**

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

#### **1.06 FIELD CONDITIONS**

- A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

### **PART 2 PRODUCTS**

#### **2.01 ACOUSTICAL UNITS**

- A. Acoustical Units: Painted mineral fiber to match existing tile characteristics:
  - 1. Anti-microbial treatment.
  - 2. Size: 24 by 24 inches.
  - 3. Composition: Wet felted.
  - 4. Edge: Angled tegular.
  - 5. Surface Color: White.
  - 6. Surface Pattern: Fine-textured, non-directional.
  - 7. Suspension System: Exposed grid.

#### **2.02 SUSPENSION SYSTEMS**

- A. Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
- B. Exposed Steel Suspension System: Formed steel, commercial quality cold rolled; heavy-duty.
  - 1. Profile: Tee; 15/16 inch wide face as scheduled.
  - 2. Construction: Double web.
  - 3. Finish: White painted.

#### **2.03 ACCESSORIES**

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

- B. Perimeter Moldings: Same material and finish as grid. Provide L-shaped molding for mounting at same elevation as face of grid.
- C. Touch-up Paint: Type and color to match acoustical and grid units.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify existing conditions before starting Work.
- B. Verify that layout of hangers will not interfere with other Work.

#### **3.02 INSTALLATION - SUSPENSION SYSTEM**

- A. Install suspension system in accordance with ASTM C636/C636M 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. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- D. 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 of each corner, or support components independently.
- H. Do not eccentrically load system or induce rotation of runners.
- I. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
  - 1. Use longest practical lengths.
  - 2. Miter corners.

#### **3.03 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 units after above-ceiling work is complete.
- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
  - 1. Cut to fit grid and perimeter edge trim.
  - 2. Make field cut edges of same profile as factory edges.
  - 3. Double cut and field paint exposed tegular edges.

#### **3.04 TOLERANCES**

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

### **END OF SECTION**

## **SECTION 09 6800 - CARPETING**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Carpet tile, fully adhered over concrete and plywood.
- B. Resilient base.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied flooring.
- B. Section 06 1000 - Rough Carpentry: Plywood substrate for carpet over elevated platforms.

#### **1.03 REFERENCE STANDARDS**

- A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2014c.
- B. CRI 104 - Standard for Installation of Commercial Carpet; 2015.
- C. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2015.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate layout of joints and direction of carpet pile.
- C. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
- D. Carpet Tile Samples: Submit two carpet tiles illustrating color and pattern design.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

#### **1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in installing carpet tile with minimum three years documented experience and approved by carpet tile manufacturer.

#### **1.06 FIELD CONDITIONS**

- A. Store materials in area of installation for minimum period of 24 hours prior to installation.

#### **1.07 EXTRA MATERIALS**

- A. See Section 01 6000 - Product Requirements, for additional provisions.
- B. Provide full box of carpet tiles of each color and pattern selected.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Shaw Contract: [www.shawcontract.com](http://www.shawcontract.com). Contact sales representative Tracie Lillard at [Tracie.Lillard@shawinc.com](mailto:Tracie.Lillard@shawinc.com) or at 515-204-3935.

#### **2.02 MATERIALS**

- A. Tile Carpeting: Multi-Level Pattern Cut/Loop, manufactured in one color dye lot.
  - 1. Basis of Design: Shaw; Entwine Tile 59337, Quince #78504.
  - 2. Tile Size: 24 by 24 inch, nominal.
  - 3. Critical Radiant Flux: Minimum of 0.22 watts/sq cm, when tested in accordance with ASTM E648 or NFPA 253.
  - 4. Maximum Electrostatic Charge: Less than 3.5 Kv. at 20 percent relative humidity.
  - 5. Gauge: 1/12 inch.

## **2.03 RESILIENT BASE**

- A. Resilient Base: ASTM F1861, Type TP, rubber, thermoplastic; as follows:
  - 1. Refer to Interior Finishes Schedule on Drawings for Basis of Design selections.
  - 2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.

## **2.04 ACCESSORIES**

- A. Sub-Floor Filler: White premix latex; type recommended by flooring material manufacturer.
- B. Filler for Resilient Base: Plastic.
- C. Adhesives: Acceptable to carpeting manufacturer, compatible with materials being adhered; maximum VOC of 50 g/L; CRI Green Label certified; in lieu of labeled product, independent test report showing compliance is acceptable.
  - 1. Contact Adhesive: Recommended and provided by carpeting manufacturer, releasable type.
  - 2. Seam Adhesive: Recommended by carpeting manufacturer.
- D. Transition Trim: Brass trim: style and dimension to suite application.
  - 1. For use at existing tile:
    - a. Basis of Design: Schluter-SCHIENE: [www.schluter.com](http://www.schluter.com).
    - b. Description: L-shaped profile with 1/8 inch wide top section with vertical and anchor legs.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpeting.
- B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.
- C. Verify that substrates are dry enough and ready for flooring installation by testing for moisture and pH. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

### **3.02 PREPARATION**

- A. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.
- B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.
- C. Vacuum clean substrate.

### **3.03 INSTALLATION - GENERAL**

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. Install carpeting in accordance with manufacturer's instructions and CRI 104 (Commercial).

### **3.04 INSTALLATION - CARPET TILE**

- A. Blend carpet tile from different cartons to ensure minimal variation in color match.
- B. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.
- C. Lay carpet tile in brick pattern, with pile direction parallel to next unit, set parallel to building lines.
- D. Fully adhere carpet tile to substrate.
- E. Trim carpet tile neatly at walls and around interruptions.
- F. Complete installation of edge strips, concealing exposed edges.



**3.05 CLEANING**

- A. Remove excess adhesive without damage, from floor, base, and wall surfaces.
- B. Clean and vacuum carpet surfaces.

**END OF SECTION**



## **SECTION 09 9000- INTERIOR PAINTING AND STAINING**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Surface preparation.
- B. Field application of paints, stains, and clear finishes.
- C. Scope: Finish interior surfaces exposed to view, unless fully factory/shop-finished and unless otherwise indicated.
- D. Do Not Paint or Finish the Following Items:
  - 1. Items factory/shop-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. Floors, unless specifically indicated.
  - 5. Glass.
  - 6. Concealed pipes, ducts, and conduits.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 06 4100 - Architectural Woodwork.

#### **1.03 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 D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials; 2007.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - 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. "latex enamel").
  - 2. Cross-reference to specified paint/finish systems product is to be used in; include description of each system.
- C. Opaque Paint 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.
  - 1. Where sheen is specified, submit samples in only that sheen.
  - 2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens definitely not required.
- D. Transparent Stain Samples: Submit two stained samples, illustrating selected colors and clear finish for each color and system selected. Submit on wood trim as specified in Section 06 4100, 6 by 6 inch in size.

#### **1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

#### **1.06 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 and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

#### **1.07 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 measured mid-height at substrate surface.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
- B. Basis of Design Top Coat Opaque Paint Products and Sheen: Sherwin-Williams; ProMar 200 Zero VOC Interior Acrylic Latex, Eg-Shel sheen.
- C. Basis of Design Transparent Finish and Stain Products: Sherwin-Williams; SHER-WOOD Water Reducible Wiping Stain and Sherwin-Williams Wood Classics Waterborne Polyurethane Varnish satin sheen top coat.
- D. Primer Sealers: Same manufacturer as top coats.
- E. Substitutions: See Section 01 6000 - Product Requirements.

#### **2.02 PAINTS, STAINS, AND CLEAR FINISHES**

- A. General: 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.
- B. Volatile Organic Compound (VOC) Content:
  - 1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
    - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
  - 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- C. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- D. Colors: To be selected from manufacturer's full range of available colors.
  - 1. Selection to be made by Architect after award of contract.

#### **2.03 PAINT AND STAIN SYSTEMS - INTERIOR**

- A. Interior Surfaces to be Painted, Unless Otherwise Indicated: Gypsum board and plaster.
  - 1. Two top coats and one coat primer.
- B. Stained Transparent Finish for Field-Finished Wood Base and Wood Doors, Frames, and Trim:
  - 1. 2 top coats over stain.

#### **2.04 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; color to match transparent stain color.

### **PART 3 EXECUTION**

#### **3.01 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. Plaster: 12 percent.
  - 3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

#### **3.02 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. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- F. Gypsum Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
- G. Wood Surfaces to Receive Stained 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.
- H. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with clear sealer.

#### **3.03 APPLICATION**

- A. Apply products in accordance with manufacturer's written instructions.
- B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- D. Sand wood surfaces lightly between coats to achieve required finish.
- E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- F. Wood to Receive Stained Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

#### **3.04 CLEANING**

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

#### **3.05 PROTECTION**

- A. Protect finishes until completion of project.

- B. Touch-up damaged finishes after Substantial Completion.

**END OF SECTION**

**SECTION 23 0050**  
**BASIC HVAC REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Basic HVAC Requirements specifically applicable to Mechanical Division Specification Sections.
- B. Division 23 Specification requirements also include, by reference, all Division 00 and 01 specification sections. This contractor is responsible to review these specification sections. Requirements of these specification sections are included as a part of this contract.

**1.02 OWNER OCCUPANCY**

- A. The owner will occupy the premises during the construction period.
- B. Limit use of site and premises to allow owner occupancy.
- C. Cooperate with the owner to minimize conflict and to facilitate owner's operations.
- D. Schedule the work to accommodate this requirement.

**1.03 REGULATORY REQUIREMENTS**

- A. This contractor shall give proper authorities all requisite notices relating to work in their charge, obtain official permits, licenses for temporary construction and pay proper fees for it.
- B. This contractor is to be solely answerable for and shall promptly make good all damage, injury or delay to other contractors, to neighboring premises or to persons or property of the public by themselves, by their employees or through any operation under their charge, whether in the contract or extra work.
- C. No attempt has been made to reproduce in these specifications any of the rules or regulations contained in city, state or federal ordinances and codes pertaining to the work covered by these specifications that the contractor be thoroughly familiar with all such ordinances and codes.
- D. The fact that said various rules, regulations and ordinances are not repeated in this specification does not relieve the contractor of the responsibility of making the entire installation in accordance with the requirement of those authorities having jurisdiction.
- E. All work shall comply with the applicable recommendations of:
  - 1. The National Board of Fire Underwriters
  - 2. American Gas Association
  - 3. The National Fire Protection Association (NFPA)
  - 4. The Occupations Safety and Health Act (OSHA)
  - 5. Current IBC Building Code
  - 6. Current applicable city building codes.
  - 7. Current International Energy Conservation Code
- F. Mechanical: Conform to current mechanical code.
- G. Obtain permits and request inspections from authority having jurisdiction.

**1.04 PROJECT/SITE CONDITIONS**

- A. Install work in locations shown on the drawings unless prevented by project conditions.
- B. Prepare drawings showing proposed rearrangement of work to meet project conditions, including changes to work specified in other sections. Obtain permission of owner and architect/engineer before proceeding.
- C. This contractor, before submitting bid, shall visit their the site of the project to familiarize themselves with locations and conditions affecting their work.
- D. It is the intent of this specification that the contractor furnishes all labor and material required completing the installation as outlined in the drawings and specifications. No additions to the

contract price shall be allowed due to the failure of this contractor to properly evaluate the effect of existing conditions on the work to be done under this contract.

- E. Whenever renovation or remodeling or relocation of existing equipment is included in the contract, it is imperative that all locations of existing piping, ductwork, equipment, services and grades be noted on the job site before bid is submitted and that all elevations and grades be verified before roughing in new work.
- F. This contractor shall provide holes as necessary for the installation of their work and in accordance with other specification sections in materials other than the structure.

#### **1.05 SEQUENCING AND SCHEDULING**

- A. This contractor shall arrange their work in order that it progresses along with the general construction of the building.
- B. This contractor shall be kept informed as to the work of other trades engaged in the project and shall execute their work in such a manner so as not to delay or interfere with progress of other contractors.
- C. Where space for mechanical and electrical lines and piping is limited, it is imperative that all such trades coordinate their work so as to ensure concealment in space provided. Where conflict exists, the engineer shall decide priority of space. If work is not properly coordinated, the engineer may require removal and relocation of work without additional compensation.

#### **1.06 GUARANTEE**

- A. This contractor shall guarantee all of the apparatus, materials, equipment furnished and labor installed under this contract for a period of one year after date of final acceptance, unless a longer period is specified.
- B. Neither final certificate of payment nor any provisions in the contract documents nor partial or complete occupancy of premises by owner shall constitute an acceptance for work not done in accordance with contract documents or relieve the contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship.
- C. Should any defects arise as the result of defective workmanship or material within the guarantee period set forth, this contractor shall make the necessary correction at their own expense.

#### **1.07 ENGINEER APPROVED EQUAL PRODUCTS**

- A. When the engineer, at the request of the interested parties, including the contractor, supplier and manufacturer approved "engineer approved equal" products for this project, such products are approved on the assumption that they will equal or exceed the performance of the products specified.
- B. If such products do not do so after being installed on this project, this contractor shall replace or modify the particular product as necessary to equal the performance of the products specified at no expense to the owner, architect or engineer.
- C. Request for "engineer approved equal" products shall be received by the architect/engineer prior to the last addendum being issued. Requests for substitutions received after this date will not be considered. Substitution requests shall clearly state which products are being considered for substitution. Substitution requests shall include all pertinent product information needed to evaluate the substitution as an "equal".
- D. Similar products shall be all of the same manufacturers and style. There is no exception to this unless prior approval has been granted from engineer.

#### **1.08 OWNER'S RIGHT OF SALVAGE**

- A. Before beginning construction, this contractor shall check and verify with the owner each item of existing equipment that must be removed.



- B. The owner will designate which items of material or equipment not reused that they may wish to keep. The contractor shall then remove these items with care and store in a location designated by the owner for the owner's disposal.
- C. All other items of equipment to be removed and not specified for reuse in new construction or reserved by the owner for their use shall become the property of the contractor and shall be removed from site.

#### **1.09 PROTECTION AND MAINTENANCE**

- A. Any work to be done in existing structures shall be coordinated with the owner and arrangements made so that traffic flow may be maintained and areas finished where possible before other areas are begun.
- B. This contractor shall protect existing equipment in finished areas from dirt, dust and damage as a result of their work.
- C. Coordinate protection requirements with department heads before beginning construction.
- D. Protect any building openings from unauthorized entry. Coordinate with owner where building entry must be controlled.

#### **1.10 DEMOLITION**

- A. This contractor shall be responsible for the demolition and removal of all existing mechanical elements within the project area except as follows:
  - 1. Elements shown on the drawings as "existing to remain and/or to be relocated".
  - 2. Elements serving adjacent areas.
  - 3. Elements required for the support of the newly remodeled areas.
  - 4. All elements to be removed are subject to the Owner's Right of Salvage.
- B. Preserve services to the existing facility. Extend/reroute/reconnect existing systems as required providing for the continued function of these systems.

#### **1.11 CUTTING AND PATCHING**

- A. This contractor shall do all cutting and patching necessary for the installation of their work in all existing and new buildings unless otherwise noted.
- B. This contractor shall do all cutting and patching required for their work beyond the remodeled areas unless otherwise noted. All finish work shall include patching to match existing adjacent surfaces. Painting shall be by others.

#### **1.12 CLEANING AND RUBBISH**

- A. This contractor, upon completion of their work, shall remove all rubbish and debris resulting from their operation and shall remove it from site at their own expense.
- B. In so far as their work is concerned, all equipment shall be cleaned and the premises left in first class condition.
- C. This contractor shall maintain the work area each day to prevent hazardous accumulation of waste from their work.

#### **1.13 HAZARDOUS MATERIALS**

- A. If the contractor stores any hazardous solvents or other materials on the site, they shall obtain copies of the safety data sheets for the materials and post them on the site. The contractor shall inform the owner and all employed of any potential exposure to this material.
- B. At no time shall any product containing asbestos be incorporated into the work.
  - 1. If asbestos materials are encountered, report to the owner. The owner will be responsible for asbestos removal.

#### **1.14 RECORD DRAWINGS**

- A. This contractor shall provide at the conclusion of the project one clean, non-torn, neat, and legible "as-built" set of drawings to the owner. These drawings shall show the routing of pipes,

ductwork and equipment drawn in at scaled locations. All dimensions indicated shall be referenced to a column line. A set of construction blue prints will be furnished for this work.

- B. All mechanical systems installed shall be shown on the "as-built" drawings. This includes all addendum items and change orders.
- C. Refer to respective architectural specification section for additional information.
- D. This contractor shall update these drawings during the project at least every week.

#### **1.15 SCOPE OF WORK**

- A. All work shall be performed by well-qualified and licensed mechanics with a thorough knowledge of the various systems involved in this building. It shall be this contractor's responsibility to see that their mechanics are familiar with all the various codes and tests applicable to this work.
- B. If there is a discrepancy between the drawings and the specifications or within either document, the more stringent requirement shall be estimated unless brought to the engineer's attention and an addendum is issued for clarification.

#### **1.16 DAILY HOUSEKEEPING**

- A. At the end of each working day, this contractor shall remove all of their debris, rubbish, tools and surplus materials from the project work area. The work area shall be broom clean and left in a neat and orderly condition. The contractor for the removal of debris from the project shall not use the owner's waste disposal facility.
- B. At end of construction, all equipment shall be cleaned and the premises left in first class condition as far as this contractor's work is concerned.

#### **1.17 ALTERNATES**

- A. Refer to General Specification Sections for alternate bid description.

#### **1.18 DIGITAL MEDIA AGREEMENT**

- A. Computer Aided Drafting (CAD) documents may be available to the contractor for some uses. Contact the engineer prior to bidding to determine what information is available to be transmitted to the contractor in digital form.
- B. When documents are determined to be available, and as requested by the contractor, they will be transmitted upon the completion and execution of the MODUS digital media agreement. A service fee for each document transmitted will be assessed to the contractor. Documents will be transmitted upon payment receipt. Current service fee is \$100.00 per CAD sheet.

#### **PART 2 PRODUCTS**

**NOT USED**

#### **PART 3 EXECUTION**

**NOT USED**

**END OF SECTION 23 0050**

**SECTION 26 0050**  
**BASIC ELECTRICAL REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Basic Electrical Requirements specifically applicable to Electrical Division Specification Sections.
- B. Division 26 Specification requirements also include, by reference, all Division 00 and 01 specification sections. This contractor is responsible to review these specification sections. Requirements of these specification sections are included as a part of this contract.
- C. Division 26 Specification requirements also include, by reference, Specification Section 08 7100 - Door Hardware. Review and inclusion of the electrical requirements of this specification section are included as a part of this contract.

**1.02 OWNER OCCUPANCY**

- A. The owner will occupy the premises during the construction period.
- B. Limit use of site and premises to allow owner occupancy.
- C. Cooperate with the owner to minimize conflict and to facilitate owner's operations.
- D. Schedule the work to accommodate this requirement.

**1.03 REGULATORY REQUIREMENTS**

- A. This contractor shall give proper authorities all requisite notices relating to work in their charge, obtain official permits, licenses for temporary construction and pay proper fees for it.
- B. This contractor is to be solely answerable for and shall promptly make good all damage, injury or delay to other contractors, to neighboring premises or to persons or property of the public by themselves, by their employees or through any operation under their charge, whether in the contract or extra work.
- C. No attempt has been made to reproduce in these specifications any of the rules or regulations contained in city, state or federal ordinances and codes pertaining to the work covered by these specifications that the contractor be thoroughly familiar with all such ordinances and codes.
- D. The fact that said various rules, regulations and ordinances are not repeated in this specification does not relieve the contractor of the responsibility of making the entire installation in accordance with the requirement of those authorities having jurisdiction.
- E. All work shall comply with the applicable recommendations of:
  - 1. The National Board of Fire Underwriters
  - 2. The ANSI-NFPA 70 National Electrical Code
  - 3. The National Fire Protection Association (NFPA)
  - 4. The Occupations Safety and Health Act (OSHA)
  - 5. IBC Building Code (current) and any current applicable city building and or electrical codes.
  - 6. Fire Protection: Conform to International Fire Code (IFC) and NFPA.
  - 7. International Energy Conservation Code (IECC)
- F. Obtain permits and request inspections from authority having jurisdiction.
- G. Conform to latest approved versions of codes.

**1.04 PROJECT/SITE CONDITIONS**

- A. Install work in locations shown on drawings unless prevented by project conditions.
- B. Prepare drawings showing proposed rearrangement of work to meet project conditions, including changes to work specified in other sections. Obtain permission of owner and architect/engineer before proceeding.

- C. This contractor, before submitting their bid, shall visit the site of the project to familiarize themselves with locations and conditions affecting their work.
- D. It is the intent of this specification that the contractor furnish all labor and material required to complete the installation as outlined in the drawings and specifications. No additions to the contract price will be allowed due to the failure of this contractor to properly evaluate the effect of existing conditions on the work to be done under this contract.
- E. Whenever renovation or remodeling or relocation of existing equipment is included in the contract, it is imperative that all locations of existing wiring conduits, electrical panels, equipment, services and grades be noted on the job site before bid is submitted and that all elevations and grades be verified before roughing in new work.
- F. This contractor shall provide, as necessary, for the installation of their work and in accordance with materials other than the structure.

#### **1.05 SEQUENCING AND SCHEDULING**

- A. This contractor shall arrange their work in order that it progresses along with the general construction of the building.
- B. This contractor shall be kept informed as to the work of other trades engaged in the project and shall execute their work in such a manner so as not to delay or interfere with progress of other contractors.
- C. Where space for mechanical and electrical lines and piping is limited, it is imperative that all such trades coordinate their work so as to ensure concealment in space provided. Where conflict exists, the engineer shall decide priority of space. If work is not properly coordinated, the engineer may require removal and relocation of work without additional compensation.

#### **1.06 GUARANTEE**

- A. This contractor shall guarantee all of the apparatus, materials, equipment furnished, and labor installed under this contract for a period of one year after date of final acceptance, unless a longer period is specified.
- B. Neither final certificate of payment nor any provisions in the contract documents nor partial or complete occupancy of premises by owner shall constitute an acceptance for work not done in accordance with contract documents or relieve the contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship.
- C. Should any defects arise as the result of defective workmanship or material within the guarantee period set forth, this contractor shall make the necessary correction at their own expense.

#### **1.07 ENGINEER APPROVED EQUAL PRODUCTS**

- A. When the engineer, at the request of the interested parties, including the contractor, supplier and manufacturer approved "engineer approved equal" products for this project, such products are approved on the assumption that they will equal or exceed the performance of the products specified.
- B. If such products do not do so after being installed on this project, this contractor shall replace or modify the particular product as necessary to equal the performance of the products specified at no expense to the owner, architect or engineer.
- C. Request for "engineer approved equal" products shall be received by the architect/engineer prior to the last addendum being issued. Requests for substitutions received after this date will not be considered. Substitution requests shall clearly state which products are being considered for substitution. Substitution requests shall include all pertinent product information needed to evaluate the substitution as an "equal".
- D. Similar products shall be all of the same manufacturers and style. There is no exception to this unless prior approval has been granted from engineer.

#### **1.08 OWNER'S RIGHT OF SALVAGE**

- A. Before beginning construction, the contractor shall check and verify with the owner each item of existing equipment that must be removed.
- B. The owner will designate which items of material or equipment not reused that they may wish to keep. The contractor shall then remove these items with care and store in a location designated by the owner for the owner's disposal.
- C. All other items of equipment to be removed and not specified for reuse in new construction or reserved by the owner for their use shall become the property of the contractor and shall be removed from the site.

#### **1.09 PROTECTION AND MAINTENANCE**

- A. The work covered by these drawings and specifications may involve work in both new and remodeled areas of the building.
- B. Where necessary to connect to any existing utility service, this electrical contractor shall contact the owner and shall coordinate any building service connection with the owner so that normal operation to the building is disrupted as little as possible.
- C. Any work to be done in existing structures shall be coordinated with the owner and arrangements made so that traffic flow may be maintained and areas finished where possible before other areas are begun.
- D. This contractor shall protect existing equipment in finished areas from dirt, dust and damage as a result of their work.
- E. Coordinate protection requirements with department heads before beginning construction.
- F. Protect any building openings from unauthorized entry. Coordinate with owner where building entry must be controlled.

#### **1.10 DEMOLITION**

- A. This contractor shall be responsible for the demolition and removal of all existing electrical elements within the project area except as follows:
  - 1. Elements shown on the drawings as "existing to remain and/or to be reused".
  - 2. Elements serving adjacent areas.
  - 3. Elements required for the support of the newly remodeled areas.
  - 4. All elements to be removed are subject to the Owner's Right of Salvage.
- B. Preserve services to the existing facility. Extend/reroute/reconnect the existing systems as required providing for the continued function of these systems.

#### **1.11 CUTTING AND PATCHING**

- A. This contractor shall do all cutting and patching necessary for the installation of his work in all existing and new buildings unless otherwise noted.
- B. In areas where the integrity of new or existing fire separation assembly/wall is compromised by the work, this contractor shall be responsible to patch and/or seal openings as necessary to maintain and/or return fire separation to rating as required by applicable codes.
- C. This contractor shall do all cutting and patching required for his work beyond the remodeled areas unless otherwise noted. All finish work shall include patching to match existing adjacent surfaces. Painting shall be by others.

#### **1.12 CLEANING AND RUBBISH**

- A. This contractor, upon completion of their work, shall remove all rubbish and debris resulting from their operation and shall remove it from site at their own expense.
- B. As far as their work is concerned, all equipment shall be cleaned and the premises left in first class condition.

- C. This contractor shall maintain the work area each day to prevent hazardous accumulation of waste from their work.

#### **1.13 SEALING AND PENETRATION**

- A. Clearance around the piping passing through fire or smoke rated construction shall be sealed to maintain the rated integrity of the construction (1 hr. 2 hrs. etc.). One and two-hour rated assemblies are to be patched on both sides of the assembly.
- B. This contractor shall verify rating and location of all such construction with the architectural drawings and seal all penetrations.
- C. Manufacturer offering products to comply with the requirements include the following:
  - 1. Dow Corning "Silicone RTV Foam"
  - 2. 3-M Corporation "Fire Barrier Caulk and Putty"
  - 3. Thomas & Betts "Flame Safe Fire Stop System"
- D. Installation of these products are to be in strict accordance with the manufacturer's recommendations.
- E. This contractor shall submit shop drawings showing approved sealing assemblies to be utilized on this project.

#### **1.14 ELECTRICAL CONNECTIONS**

- A. This contractor shall mount and wire all magnetic starters, thermal protective switches, and speed changing switches furnished under the mechanical contract and install such starters and switches and wire them to their respective motors as a part of the electrical contract.
- B. All other magnetic starter switches, safety switches and speed control devices indicated on the electrical drawings or specifications are the responsibility of the electrical contractor to furnish and install.
- C. Unless specifically stated elsewhere, the wiring of the temperature control system shall be the responsibility of the mechanical contractor.
- D. The contractor shall provide line voltage power and rough-in for Fire Alarm system. Coordinate required line voltage and installation locations prior to bid.

#### **1.15 HAZARDOUS MATERIALS**

- A. If the contractor stores any hazardous solvents or other materials on the site, they shall obtain copies of the safety data sheets for the materials and post them at the site. The contractor shall inform the owner and all employed of any potential exposure to this material.
- B. At no time shall any product containing asbestos be incorporated into the work.
  - 1. If asbestos materials are encountered, report to the owner. The owner will be responsible for asbestos removal.

#### **1.16 AS-BUILT DRAWINGS**

- A. This electrical contractor shall provide (at the conclusion of the project) one clean, non-torn, neat and legible "as-built" set of drawings to the owner. These drawings shall show the routing of conduit, wiring and equipment drawn in at scaled locations. All circuits shall be labeled and shall conform to labeled panel breakers. All dimensions indicated shall be referenced to a column line. A set of construction drawings will be furnished for this work.
- B. All electrical panels and electrical installed equipment shall be shown on the "as-built" drawings.
- C. Refer to General Specification Sections for additional requirements.
- D. This contractor shall update these drawings during the project at least once a week.

#### **1.17 ALTERNATES**

- A. Refer to description of alternate bids under General Specification Sections.

### **1.18 REVIEW OF MATERIALS**

- A. This contractor shall submit to the engineer for review one (1) electronic copy giving a complete list of materials, fixtures, devices and panels they propose to furnish. The brochure shall contain complete information as to the make of equipment, type, size, capacities, dimensions, and illustration. One of the returned copies shall be kept on the job at all times.
- B. Checking of submittal drawings by the engineer does not relieve the contractor of the responsibility for the accuracy of such drawings and for their conformity to drawings and specifications unless the contractor notifies engineer, in writing, of such deviation at time such drawings are furnished.
- C. All submittals shall have the date marked on them when the contractor receives them from the supplier. Submittals shall be submitted through the contractor and shall not come direct from the supplier to the architect or engineer.
- D. This contractor shall mark the date and sign each set. This indicates that each of them have been checked in their entirety before submitting to the engineer. Submittals that are not dated and signed by the contractor will not be accepted or checked and will be marked "resubmit" and sent back to the contractor.

### **1.19 TEST OF SYSTEMS**

- A. This contractor shall, before concealed, test all systems installed under this contract as called for in these specifications and as required by local codes. Tests shall be made in the presence of the engineer, local authorities or their duly authorized representative. Any defects discovered in testing shall be corrected and the tests repeated until all defects are eliminated.
- B. This contractor shall be held responsible for all damage resulting from defects in the system.
- C. Each individual feeder circuit shall be tested at the panel and in testing for insulation resistance to ground; the power equipment shall be connected for proper operation. In no case shall the insulation resistance to ground be less than that required by the National Electrical Code (NEC).
- D. For 480V systems that are 1,000 amps or greater, this contractor shall provide primary injection testing to satisfy the requirements of the National Electrical Code (NEC) to ensure the ground-fault protection system has been performance tested when first installed on-site and provide a written record of this test to the Owner once completed.

### **1.20 SCOPE OF WORK**

- A. This contractor shall furnish all the labor and material necessary to install a complete electrical system for the building. The system shall include all items of work as outlined in these specifications and on the drawings.
- B. All work shall be performed by a well-qualified, licensed electrician with a thorough knowledge of the various systems involved in this building. It shall be this contractor's responsibility to see that their employees are familiar with all the various codes and tests applicable to this work.
- C. All equipment shall be new and of the type specified by the engineer unless otherwise noted in these specifications or on the drawings to remain and or be reused.
- D. The intent of the specifications and drawings is for complete installation of the systems outlined in the specifications and drawings so that at the conclusion of construction the system will be turned over to the owner complete and ready for safe and efficient operation. The specifications and drawings cannot deal individually with the many minute items that may be eventually required by the nature of the systems.
- E. This contractor is required to furnish and install all such items normally included on systems of this type, which, while not mentioned directly herein or on the drawings are obviously essential to the installation and operation of the system and which are normally furnished on quality installation of this type.

- F. This contractor, before proceeding with any work, shall review the architectural drawings. Any conflict between the electrical and architectural drawings shall be reported to the engineer for clarification.
- G. If there is a discrepancy between the drawings and the specifications or within either document, the more stringent requirement shall be estimated unless brought to the engineer's attention and an addendum is issued for clarification.
- H. The Electrical Contractor shall establish electrical utility elevations prior to fabrication and installation. The Electrical Contractor shall coordinate utility elevations with other trades. All elevations shall be coordinated with all trades in the field prior to installation. When a conflict between trades arises, the design team shall be notified immediately prior to further installation however priority shall be as follows:
  - 1. Lighting Fixtures
  - 2. Gravity flow piping, including steam and condensate.
  - 3. Electrical bus duct.
  - 4. Sheet metal.
  - 5. Cable trays, including access space.
  - 6. Other piping.
  - 7. Conduits and wireway.

#### **1.21 DAILY HOUSEKEEPING AND CLEANING**

- A. At the end of each workday, the contractor shall remove all of their debris, rubbish, tools, and surplus materials from the project work area. The work area shall be broom cleaned and left in a neat and orderly condition. The contractor shall not use the owner's waste disposal facility for the removal of debris from the project.
- B. At end of construction, all equipment shall be cleaned and the premises left in first class condition as far as this contractor's work is concerned.

#### **1.22 WALL CONTINUITY (1 HR.)**

- A. All items mounted in 1 hr. rated walls requiring an opening larger than a four inch (4") square (16 sq. inches) require the 1 hr. rating not be degraded.
- B. Any branch panel in a 1 hr. wall will require the exterior of the recessed panel be covered with 5/8 inch fire rated gypsum board. This is true for any device requiring more than a 16 sq. inch opening.

#### **1.23 LOW VOLTAGE CONDUIT INSTALLATION**

- A. This contractor shall install conduit serving low voltage cables located in all mechanical rooms and non-accessible areas and exposed structural areas. Use cable trays in other areas as indicated on the drawings. Where cable trays are not accessible, use J-hooks equal to Caddy Cable CAT. Provide hooks with closure holes and cable ties. Mount hooks three foot (3') on center.
- B. This contractor shall install conduit sleeves serving low voltage cables through walls and floors.
- C. Refer to other specification sections for additional information.

#### **1.24 TEMPORARY POWER AND LIGHTING**

- A. Temporary electrical power and lighting necessary for the construction process is the responsibility of the electrical contractor and shall be included in the base bid amount.

#### **1.25 DIGITAL MEDIA AGREEMENT**

- A. Computer Aided Drafting (CAD) documents may be available to the contractor for some uses. Contact the engineer prior to bidding to determine what information is available to be transmitted to the contractor in digital form.
- B. When documents are determined to be available, and as requested by the contractor, they will be transmitted upon the completion and execution of the MODUS digital media agreement. A



service fee for each document transmitted will be assessed to the contractor. Documents will be transmitted upon payment receipt. Current service fee is \$100.00 per CAD sheet.

**PART 2 PRODUCTS**

**NOT USED**

**PART 3 EXECUTION**

**NOT USED**

**END OF SECTION 26 0050**



**SECTION 26 0090**  
**MINOR ELECTRICAL DEMOLITION FOR REMODELING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. The requirements of the Contract Forms, the Conditions of the Contract, Division 1 - General Requirements and Specification Section 26 0050 - Basic Electrical Requirements "General Provisions" apply to this section.

**1.02 SCOPE**

- A. This contractor shall be responsible for the demolition and removal of all existing electrical elements within the project area except as follows:
  - 1. Elements shown on the drawings as "existing to remain and/or to be relocated".
  - 2. Elements serving adjacent areas.
  - 3. Elements required for the support of the newly remodeled areas.
- B. Preserve services to the existing facility. Extend, reroute, and reconnect existing systems as required providing for the continued function of these systems.
- C. Demolition shall be accomplished by the proper tools and equipment for the work to be removed. Personnel shall be experienced and qualified in the type of work to be performed.
- D. This electrical contractor shall remove all abandoned equipment, conduit, supports, equipment curbs and bases associated with the remodeled area unless noted otherwise.
- E. This contractor is responsible to provide temporary electrical protection during this project.

**1.03 MATERIALS**

- A. All elements to be removed are subject to the Owner's Right of Salvage.
- B. All materials removed shall be the property of the removing contractor and shall be removed from the site by them, unless otherwise specified.
- C. The owner may designate and have salvage rights to any material herein demolished by this contractor. It will be the owner's responsibility to designate such salvageable items and remove them prior to the contractor working in that area.

**1.04 WORK BY OTHERS**

- A. Unless specifically noted under other contracts, the electrical contractor shall assume they will perform all required work. In general, the following will be performed by others:
  - 1. The mechanical contractor shall be responsible for the cutting and capping of all existing gas, water, sewer, and any other utility service.

**1.05 EXISTING CONDITIONS**

- A. If any existing fixtures or devices that are to remain are disturbed by operations under this contract, the contractor is required to re-establish continuity of such systems.
- B. The electrical contractor shall arrange for the general contractor to repair and patch all construction with material necessary to match surrounding due to removal of equipment and conduit.
- C. The electrical contractor shall furnish all required labor and material, where required, to extend new work to connect to similar work for extension of existing systems.
- D. Demolition plans are based on casual field observations and existing record documents. Report discrepancies to the owner before disturbing existing installation. Beginning of demolition means installer accepts existing conditions.

## **PART 2 PRODUCTS**

### **NOT USED**

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify field-circuiting arrangements and reconnect as necessary.
- B. Verify that abandoned wiring and equipment serve only abandoned facilities. Reconnect circuits, as required, to prevent de-energizing of remaining receptacles and lights.
- C. Demolition drawings are based on casual field observation and existing record documents. Report discrepancies to the owner before disturbing existing installation.
- D. Beginning of demolition means installer accepts existing conditions.
- E. Review existing panels to remain in the area of construction. Notify the design team of any damaged circuit breakers or missing closure plates.
- F. Review existing lighting to remain in the area of construction. Notify the design team of any non-functional lamps, ballasts, or electrical parts.

### **3.02 PREPARATION**

- A. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal. Disconnect circuits at the source.
- B. Coordinate utility service outage with local utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits use personnel experienced in such operations. This shall include 600 volt or less systems and low voltage signal circuits.
- D. Existing Telephone System: Maintain existing system in service.

### **3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK**

- A. Demolish and extend existing electrical work under provisions of this section.
- B. Remove, relocate, and extend existing installations to accommodate new construction.
- C. Remove abandoned wiring to source of supply.
- D. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors and patch surfaces.
- E. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide a blank cover for abandoned outlets that have not been removed.
- F. Disconnect and remove abandoned luminaires, brackets, stems, hangers, and other accessories. This contractor shall include in their bid, associated fees for disposal of ballasts and lamps.
- G. Repair adjacent construction and finishes damaged during demolition and extension work.
- H. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.
- I. Extend existing installation using materials and methods compatible with existing electrical installations or as specified.
- J. The electrical contractor is responsible for removal of lamps and ballast from existing fixtures to be demolished. The electrical contractor is to properly dispose of these items in accordance with codes for hazardous materials.

### **3.04 CLEANING AND REPAIR**

- A. Clean and repair existing materials that remain or are to be reused.

- B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Provide typed circuit directory showing revised circuiting arrangement.
- C. Luminaires: Remove existing luminaires for cleaning. Use mild detergent to clean all exterior and interior surfaces; rinse with clean water and wipe dry.

**3.05 INSTALLATION**

- A. Install relocated materials and equipment.

**END OF SECTION 26 0090**



**SECTION 26 0519**  
**ELECTRICAL POWER CONDUCTORS AND CABLES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Building wire
- B. Wiring connectors

**1.02 RELATED SECTIONS**

- A. Specification Section 26 0553 - Identification for Electrical Systems

**1.03 REFERENCES**

- A. NECA Standard of Installation (National Electrical Contractors Association)
- B. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems (International Electrical Testing Association)
- C. NFPA 70 - National Electrical Code
- D. Product Data: Provide for each cable assembly type.
- E. Test Reports: Indicate procedures and values obtained.
- F. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements.
- G. NFPA 92B - Smoke Management for Malls, Atria, and Large Spaces
- H. IBC Section 909 - Smoke Control Systems

**1.04 QUALIFICATIONS**

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

**1.05 REGULATORY REQUIREMENTS**

- A. Conform to NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

**1.06 PROJECT CONDITIONS**

- A. Verify that field measurements are as indicated.
- B. Wire and cable routing indicated is approximate unless dimensioned. Include wire and cable lengths within 10 foot of length shown.

**1.07 COORDINATION**

- A. Where wire and cable destination is indicated and routing is not shown, determine exact routing and lengths required.

**PART 2 PRODUCTS**

**2.01 BUILDING WIRE**

- A. Manufacturers:
  - 1. Okanite
  - 2. Bell/Hubbell #BICC
  - 3. American Insulated Wire
  - 4. General Cable
  - 5. Southwire
  - 6. United Copper Industries
  - 7. Encore Wire Corporation
  - 8. Engineer approved equal.

- B. Description: Insulated conductor wire.
  - 1. All wire shall be stranded. Refer to Section 26 0553 Identification for Electrical Systems for conductor color requirements.
  - 2. Provide solid wire pigtails at all wiring devices and lighting control devices.
- C. Conductor:
  - 1. Copper
- D. Insulation Voltage Rating: 600 volts.
- E. Insulation: NFPA 70, type #THHN/THWN-2. All cable installation procedures or sizing shall be based on 75 deg C temperature rating.

## **2.02 WIRING CONNECTORS**

- A. Split Bolt Connectors:
  - 1. Burndy
  - 2. Engineer approved equal.
- B. Spring Wire Connectors:
  - 1. Thomas & Betts
  - 2. Engineer approved equal.
- C. Compression Connectors:
  - 1. Burndy
  - 2. Thomas & Betts
  - 3. Engineer approved equal.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire and cable has been completed.
- C. Verify that raceway installation is complete and supported.

### **3.02 PREPARATION**

- A. Completely and thoroughly swab raceway over two inch (2") in size or buried below grade before installing wire.

### **3.03 WIRING METHODS**

- A. Concealed Dry Interior Locations: Use only building wire, type #THHN/THWN-2 insulation in raceway.
- B. Exposed Dry Interior Locations: Use only building wire, type #THHN/THWN-2 insulation in raceway.
- C. Above Accessible Ceilings: Use only building wire, type #THHN/THWN-2 insulation in raceway
- D. Interior Installations: Use only building wire, type #THHN/THWN-2 insulation, in raceway.
- E. Use wiring methods indicated.

### **3.04 INSTALLATION**

- A. Route wire and cable as required meeting project conditions.
- B. Install cable in accordance with the NECA "Standard of Installation."
- C. Use stranded conductors for feeders and branch circuits larger than 12 AWG.
- D. Use conductors not smaller than 12 AWG for power and lighting circuits. Only pre-manufactured fixture whips are allowed to be 14 AWG.
- E. Use #10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
- F. Use #10 AWG conductors for 20 ampere, 208/240 volt branch circuits longer than 200 feet.



- G. Use #10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 300 feet.
- H. It shall be the responsibility of the electrical contractor to verify all voltage drop and size all wire accordingly.
- I. Pull all conductors into raceway at same time.
- J. Use suitable wire pulling lubricant for building wire #4 AWG and larger.
- K. Protect exposed cable from damage.
- L. Use suitable cable fittings and connectors.
- M. Neatly train and lace wiring inside boxes, equipment and panel boards.
- N. Clean conductor surfaces before installing lugs and connectors.
- O. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- P. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, #8 AWG and smaller.
- Q. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, #10 AWG and smaller. All connections in exterior hand holes shall have liquidtight connections.
- R. Identify and color code wire and cable under provisions of Specification Section 26 0553 - Identification for Electrical Systems. Identify each conductor with its circuit number or other designation indicated.
- S. Do not install multi-wire branch circuits. No sharing of neutral shall be permitted.
- T. Install all conductors and make final connections in accordance with all manufacturer's recommendations.

### **3.05 FIELD QUALITY CONTROL**

- A. Perform field inspection and testing.
- B. Inspect wire and cable for physical damage and proper connection.
- C. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.
- D. Verify continuity of each branch circuit conductor.

**END OF SECTION 26 0519**



**SECTION 26 0526**  
**GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Mechanical connectors
- B. Wire

**1.02 SUMMARY**

- A. Provide all labor, materials, and equipment necessary to properly install a grounding system conductor in all new branch wiring and feeder installations, which shall be in full compliance with all applicable codes as accepted by the authorities having jurisdiction. The secondary distribution system shall include a grounding conductor in all raceways in addition to the return path of the metallic conduit.
- B. In general, all electrical equipment (metallic conduit, motor frames, panelboards, etc.) shall be bonded together with a green insulated or bare copper system grounding conductor in accordance with specific rules of Article 250 of the NEC and local codes. The bonding conductor through the raceway system shall be continuous from main switch ground bus to panel ground bar of each panelboard, and from panel grounding bar of each panelboard to branch circuit equipment and devices.
- C. All raceways shall have an insulated copper system ground conductor throughout the entire length of circuit installed within conduit in strict accordance with NEC. The grounding conductor shall be included in total conduit fill determining conduit sizes, even though not included or shown on drawings. All grounding conductors that run with feeders in PVC conduit outside of building shall be bare only.
- D. Provide and install all grounding and bonding as required by the National Electrical Code (NEC) including but not limited to Article 800 of the NEC.

**1.03 REFERENCES**

- A. ANSI/NFPA 70 - National Electrical Code
- B. NFPA 99 - Health Care Facilities
- C. The Joint Commission
- D. Iowa Administrative Code, Chapter 61
- E. IEEE 837-2014: Standard for Qualifying Permanent Connections Used in Substation Grounding
- F. IEEE Emerald Book
- G. IEEE Green Book

**1.04 PROJECT RECORD DOCUMENTS**

- A. Submit record documents to accurately record actual locations of grounding electrodes.
- B. Submit test results of each ground rod.

**1.05 REGULATORY REQUIREMENTS**

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

**PART 2 PRODUCTS**

**2.01 MECHANICAL CONNECTORS**

- A. All grounding connectors shall be in accordance with UL 467 and UL listed for use with rods, conductors, reinforcing bars, etc., as appropriate.

- B. Connectors and devices used in the grounding systems shall be fabricated of copper or bronze materials, and properly applied for their intended use. All connectors and devices shall be compatible with the surfaces being bonded and shall not cause galvanic corrosion by dissimilar metals.
- C. Lugs: Substantial construction, of cast copper or bronze with "ground" (micro-flat) surfaces, twin clamp, and two-hole tongue equal to Burndy QQA Series.
- D. Grounding and Bonding Bushings: Malleable iron.
  - 1. Manufacturers:
    - a. Thomas & Betts
    - b. Engineer approved equal.
- E. Piping Clamps: Burndy GAR-TC Series with a two-hole compression terminal.
- F. Grounding Screw and Pigtail: Raco #983.
- G. Building Structural Steel: Thompson #701 Series heavy duty bronze "C" clamp with two-bolt vise-grip cable clamp or equal.
- H. Mechanical lugs or wire terminals shall be used to bond ground wires together or to junction boxes and panel cabinets.

## **2.02 WIRE**

- A. Material: Stranded copper.
- B. Size to meet NFPA 70 requirements as a minimum. Increase size if called for on drawings or in these specifications.
- C. Insulated THWN (or bare as noted elsewhere).

## **PART 3 EXECUTION**

### **3.01 GENERAL**

- A. Install products in accordance with manufacturer's instructions.
- B. Install grounding electrodes conductor, bonding conductors, ground rods, etc. with all required accessories.
- C. Grounding shall meet (or exceed as required to meet these specifications) all the requirements of the N.E.C., the NFPA, and applicable standards of IEEE.
- D. Where there is a conflict between these specifications and the above applicable codes/standards or between this section of these specifications and other sections, then the most stringent or excessive requirement shall govern. Where there is an omission of a code/standard requirement in these specifications then the current code/standard requirements shall comply.
- E. Requirement in these specifications to comply with a specific code/standard article, etc. is not to be construed as deleting of requirements of other applicable codes/standards and their articles, etc.

### **3.02 GROUNDING CONDUCTORS**

- A. Grounding conductors shall be provided with every circuit to meet (or exceed as required to meet these specifications and/or drawings) the requirements of NEC 250.
- B. At every voltage level, new portions of the electrical power distribution system shall be grounded with a dedicated copper conductor, which extends from termination back to power source in supply panelboard.
- C. Provide separate, insulated (bare if with feeder in PVC conduit outside of building) conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug.
- D. Except as otherwise indicated, each feeder raceway on the load side of the service entrance shall contain a ground conductor sized as indicated and where not shown shall be sized to meet (or exceed as required) these specifications and/or drawings the requirements of NEC

250. The conductor shall be connected to the equipment grounding bus in switchboards and panelboards, to the grounding bus in all motor control centers, and as specified to lighting fixtures, motors, and other types of equipment and outlets. The ground shall be in addition to the metallic raceway and shall be properly connected thereto, using a lug device located within each item enclosure at the point of electric power connections to permit convenient inspection.

- E. Provide green insulated ground wire for all receptacles and for equipment of all voltages. In addition to grounding strap connection to metallic outlet boxes, a supplemental grounding wire and screw equal to Raco No. 983 shall be provided to connect receptacle ground terminal to the box.
- F. All plug strips and metallic surface raceway shall contain a green insulation ground conductor from supply panel ground bus connected to grounding screw on each receptacle in strip and to strip channel. Conductor shall be continuous.
- G. Where integral grounding conductor is specified elsewhere in bus duct construction, provide equivalent capacity conductor from supply switchboard or panelboard grounding bus to the bus duct grounding conductor. Bond integral conductor to bus duct enclosure at each tap and each termination.
- H. All motors, all heating coil assemblies, and all building equipment requiring flexible connections shall have a green grounding conductor properly connected to the frames and extending continuously inside conduit with circuit conductors to the supply source bus with accepted connectors regardless of conduit size or type. This shall include food service equipment, laundry equipment, and all other "Equipment By Owner" to which an electric conduit is provided under this Division.

### **3.03 LIGHT FIXTURES**

- A. All new and removed/reinstalled fixtures in building interior, and exterior fixtures shall be provided with green grounding conductor, solidly connected to unit. Individual fixture grounds shall be with lug to fixture body, generally located at point of electrical connection to the fixture unit.
- B. All suspended fixtures and those supplied through flexible metallic conduit shall have green ground conductor from outlet box to fixture. Cord connected fixtures shall contain a separate green ground conductor.
- C. Pole Light Fixtures:
  - 1. Grounding Electrodes:
    - a. Two or more ten foot (10') ground rods at no less than ten foot (10') spacing shall be driven vertically to a minimum depth of ten foot' plus one foot below grade.
    - b. Bond the two or more ground rod electrodes together with a Class I or Class II lightning protection main copper conductor.
    - c. Provide additional rod electrodes as required to achieve specified ground resistance.
    - d. The two or more grounding rod electrodes shall be installed at each light pole.
- D. Installation shall exceed minimum requirements of NFPA 780.

### **3.04 MISCELLANEOUS GROUNDING CONNECTIONS**

- A. Provide bonding to meet regulatory requirements.
- B. Required connections to building steel shall be with UL accepted non-reversible crimp type ground lugs exothermically welded to bus bar that is either exothermically welded or bolted to steel in locations where weld will affect the structural properties of the steel. Required connections to existing building structural steel purlins/i beams shall be with heavy duty bronze "C" clamp with two bolt vise-grip cable clamp.
- C. Grounding conductors shall be so installed as to permit shortest and most direct path from equipment to ground; be installed in conduit; be bonded to conduit at both ends when conduit is metal; have connections accessible for inspection; and made with accepted solderless connectors brazed or bolted to the equipment or to be grounded; in NO case be a current

carrying conductor; have a green jacket unless it is bare copper; be run in conduit with power and branch circuit conductors. The main grounding electrode conductor shall be exothermically welded to ground rods, water pipe, and building steel.

- D. All surfaces to which grounding connections are made shall be thoroughly cleaned to maximum conductive condition immediately before connections are made thereto. Metal rust proofing shall be removed at grounding contact surfaces, for 0 ohms by digital Vm. Exposed bare metal at the termination point shall be painted.
- E. All ground connections that are buried or in otherwise inaccessible locations, shall be welded exothermically. The weld shall provide a connection which shall not corrode or loosen and which shall be equal or larger in size than the conductors joined together. The connection shall have the same current carrying capacity as the largest conductor.
- F. Install ground bushings on all metal conduits entering enclosures where the continuity of grounding is broken between the conduit and enclosure (i.e. metal conduit stub-up into a motor control center enclosure or at ground bus bar). Provide an appropriately sized bond jumper from the ground bushing to the respective equipment ground bus or ground bus bar.
- G. Install ground bushings on all metal conduits where the continuity of grounding is broken between the conduit and the electrical distribution system (i.e. metal conduit stub-up from wall outlet box to ceiling space. Provide an appropriately sized bond jumper from the ground bushing to the respective equipment ground bus or ground bus bar.
- H. Each feeder metallic conduit shall be bonded at all discontinuities, including at switchboards and all sub distribution and branch circuit panels with conductors in accordance with applicable table in NEC 250 for parallel return with respective interior grounding conductor.
- I. Grounding provisions shall include double locknuts on all heavy wall conduits.
- J. Bond all metal parts of pole light fixtures to ground rod at base.
- K. Install grounding bus in all existing panelboards of remodeled areas, for connection of new grounding conductors, connected to an accepted ground point.
- L. Bond together reinforcing steel and metal accessories in pool and fountain structures.
- M. Where reinforced concrete is utilized for building grounding system, proper reinforced bonding shall be provided to secure low resistance to earth with "thermite" type devices, and #10AWG wire ties shall be provided to not less than ten full length rebars that contact the connected rebar.

### **3.05 TESTING AND REPORTS**

- A. Raceway Continuity: Metallic raceway system as a component of the facilities ground system shall be tested for electrical continuity. Resistance to ground throughout the system shall not exceed specified limits.

### **3.06 INTERFACE WITH OTHER PRODUCTS**

- A. Interface with communications system installed under other specification sections.

### **3.07 FIELD QUALITY CONTROL**

- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.
- B. Use suitable test instrument with current certificate of calibration to measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using the fall-of-potential method or signal injection method.

**END OF SECTION 26 0526**

**SECTION 26 0529**  
**HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Product requirements
- B. Formed steel channel

**1.02 REFERENCES**

- A. NECA Standard of Installation (National Electrical Contractors Association)
- B. NFPA 70 - National Electrical Code

**1.03 SUBMITTALS**

- A. Product Data: Provide manufacturers catalog data for fastening systems.
- B. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of products.

**1.04 REGULATORY REQUIREMENTS**

- A. Conform to requirements of NFPA 70.
- B. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.

**PART 2 PRODUCTS**

**2.01 PRODUCT REQUIREMENTS**

- A. Materials and Finishes:
  - 1. Corrosion resistant.
  - 2. Select materials, sizes, and types of anchors, fasteners and supports to carry the loads of equipment and conduit, including weight of wire in conduit.
- B. Anchors and Fasteners:
  - 1. Concrete Structural Elements: Use expansion anchors and preset inserts.
  - 2. Steel Structural Elements: Use beam clamps and welded fasteners.
  - 3. Concrete Surfaces: Use self-drilling anchors and expansion anchors.
  - 4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use toggle bolts and hollow wall fasteners.
  - 5. Solid Masonry Walls: Use expansion anchors and preset inserts.
  - 6. Sheet Metal: Use sheet metal screws.
  - 7. Wood Elements: Use wood screws.
- C. Staples:
  - 1. Wood Elements: UV resistant polyethylene saddles. For use with non-metallic sheathed cable only.

**2.02 FORMED STEEL CHANNEL**

- A. Manufacturers:
  - 1. Globe Strut
  - 2. Uni-Strut
  - 3. Kindorf
  - 4. Power-Strut
  - 5. Erico
  - 6. Engineer approved equal.
- B. Description: Galvanized steel.
- C. Provide aluminum supports and hangers in pool area and pool equipment room.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions and utility company regulations where applicable.
- B. Provide anchors, fasteners and supports in accordance with NECA "Standard of Installation".
  - 1. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
  - 2. Do not use spring steel clips and clamps.
  - 3. Do not use powder-actuated anchors.
  - 4. Do not drill or cut structural members.
- C. Fabricate supports from structural steel or formed steel members or steel channel. Rigidly weld members or use hexagon-head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
- D. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- E. Use steel channel supports to stand cabinets and panelboards one inch (1") off wall in all wet and damp locations.
- F. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.
- G. Reinforce outdoor concrete pads with 1/2 inch steel reinforcing bars on 12 inch centers or as shown on the drawings.
- H. All pathways and hangers shall be independently hung.

**END OF SECTION 26 0529**



**SECTION 26 0533**  
**RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Conduit requirements
- B. Conduit types
- C. Box types
- D. Surface metal raceway types

**1.02 REFERENCES**

- A. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated
- B. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated
- C. ANSI C80.5 - Rigid Aluminum Conduit
- D. ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies
- E. ANSI/NFPA 70 - National Electrical Code
- F. NEMA 250 - Enclosures for Electric Equipment
- G. NEMA WD 6 - Wiring Device Configurations
- H. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
- I. NECA (National Electrical Contractor's Association) Standard of Installation
- J. NEMA WD 6 - Wiring Device Configurations
- K. TIA-569-B - Commercial Building Standard for Telecommunications Pathways and Spaces
- L. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports; National Electrical Manufacturers Association; 2013 (ANSI/NEMA OS2)
- M. UL 514C- Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers; Current Edition, Including All Revisions

**1.03 PROJECT RECORD DOCUMENTS**

- A. Accurately record actual routing of conduits larger than two inches.
- B. Record actual locations and mounting heights of outlet, pull, and junction boxes on project record documents.

**1.04 REGULATORY REQUIREMENTS**

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

**1.05 SUBMITTALS**

- A. Product Data: Provide dimensions, knockout sizes and locations, materials, fabrication details, finishes, and accessories.
- B. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

**1.06 QUALIFICATIONS**

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, store, protect, and handle products to the site.
- B. Accept products on site. Inspect for damage.
- C. Protect products from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

### **1.08 PROJECT CONDITIONS**

- A. Verify that field measurements are as shown on the drawings.
- B. Verify routing and termination locations of conduit prior to rough in.
- C. Conduit routing is shown on the drawings in approximate locations unless dimensioned. Route as required completing the wiring system.

## **PART 2 PRODUCTS**

### **2.01 CONDUIT REQUIREMENTS**

- A. Minimum Size: 1/2 inch for power wiring and 1 inch for low voltage wiring unless noted otherwise.
- B. Size conduit per ANSI/NFPA 70.
- C. Dry Locations:
  - 1. Concealed: Use rigid steel conduit, intermediate metal conduit or electrical metallic tubing.
  - 2. Exposed: Use rigid steel conduit, intermediate metal conduit or electrical metallic tubing.

### **2.02 CONDUIT TYPES**

- A. Metal Conduit:
  - 1. Rigid Steel Conduit: ANSI C80.1
  - 2. Rigid Aluminum Conduit: ANSI C80.5
  - 3. Intermediate Metal Conduit (IMC): Rigid steel
  - 4. Fittings and Conduit Bodies: ANSI/NEMA FB 1; material to match conduit.
- B. Flexible Metal Conduit:
  - 1. Description: Interlocked steel construction.
  - 2. Fittings: ANSI/NEMA FB 1.
- C. Electrical Metallic Tubing (EMT):
  - 1. Description: ANSI C80.3; galvanized tubing.
  - 2. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel compression type with steel lock nut, and ring or steel setscrew fittings. Install compression type fittings in all wet and damp areas.
- D. Pre-manufactured Fixture Whips:
  - 1. Manufacturers:
    - a. Southwire
    - b. EPCO
    - c. Engineer approved equal.
  - 2. Description: UL listed flexible conduit with conductors and die-cast screw connectors on the end.
  - 3. Size: no longer than 6', 3/8" diameter.
  - 4. Wire: 14 AWG minimum for lighting and required by the load.
  - 5. Install between junction box and light fixture only in concealed and unfinished spaces. Use interior raceway or surface raceway where exposed in finished spaces.
- E. Fittings and Conduit Bodies:
  - 1. NEMA TC 3
  - 2. Install offsets at surface boxes.

3. Install single hole strap connectors on all exposed conduit one inch (1") and smaller.

## **2.03 BOX TYPES**

- A. General Requirements:
  1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
  2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
  3. Provide a low voltage partition divider plate for applications where low voltage and line voltage circuits share the same outlet box.
- B. Outlet Boxes:
  1. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1, galvanized steel.
    - a. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported. Include 1/2 inch male fixture studs where required.
    - b. Concrete Ceiling Boxes: Concrete Type.
  2. Sheet Metal Communications Boxes: ANSI/NEMA OS 1, galvanized steel. Minimum of 4-11/16 inch square with a depth of 2-1/8 inch.
    - a. Refer to the drawings for plaster ring size/opening.
- C. Pull and Junction Boxes:
  1. Sheet Metal Boxes: NEMA OS 1 galvanized steel.

## **2.04 SURFACE METAL RACEWAY TYPES**

- A. Surface Metal Raceway:
  1. Manufacturers:
    - a. Wiremold #V500 or #V700
    - b. Hubbell
    - c. Engineer approved equal.
  2. Description: Sheet metal channel with fitted cover, suitable for use as surface metal raceway.
  3. Size as required or as indicated on drawings.
  4. Finish is to be ivory enamel.
  5. Color coat to be applied by others.
  6. Fittings, Boxes, and Extension Rings: Furnish manufacturer's standard accessories.
  7. Combination Device Box: Furnish Wiremold #V5748 Series.
- B. Multi-Outlet or Wiring Assembly:
  1. Manufacturers:
    - a. Connectrac Flex Raceway System
    - b. Engineer approved equal.
  2. Assembly: Sheet metal channel with power hub connections allowing interchangeable devices.
  3. Size as indicated on the drawings.
  4. Receptacles: Install receptacles and data provided per manufacturer's instructions.
  5. Fittings: Furnish manufacturer's standard fittings, elbows and connectors.

## **PART 3 EXECUTION**

### **3.01 CONDUIT INSTALLATION**

- A. Install conduit in accordance with NECA "Standard of Installation."
- B. Arrange supports to prevent misalignment during wiring installation.
- C. Support conduit using coated steel, malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- D. Group related conduit support using conduit rack. Construct rack using steel channel and provide space on each for 25% additional conduits.

- E. Fasten conduit supports to building structure and surfaces.
- F. Do not support conduit with perforated pipe straps. Remove wire used for temporary supports.
- G. Do not use spring steel clips and clamps for support.
- H. Do not attach conduit to ceiling support wires.
- I. Arrange conduit to maintain headroom and present neat appearance.
- J. Route exposed conduit parallel and perpendicular to walls.
- K. Route conduit installed above accessible ceilings, parallel and perpendicular to walls.
- L. Route the conduit in and under slab from point-to-point.
- M. Do not cross conduits in slab.
- N. Maintain adequate clearance between conduit and piping.
- O. Maintain 12 inch clearance between conduit and surfaces with temperatures exceeding 104 degree F.
- P. Cut conduit square using saw or pipe cutter; de-burr cut ends.
- Q. Bring conduit to shoulder of fittings; fasten securely.
- R. Use conduit hubs to fasten conduit to cast boxes.
- S. A run of conduit shall not contain more than the equivalent of four (4) quarter bends (360 degrees), including those bends located immediately at the outlet or body. Use conduit bodies to make sharp changes in direction (as around beams). Use hydraulic one-shot bender to fabricate bends in metal conduit larger than two inch (2") size. All conduit shall be held right to structure.
- T. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- U. Provide suitable fittings to accommodate expansion and deflection where conduit crosses control and expansion joints.
- V. Provide suitable pull string in each empty conduit except sleeves and nipples.
- W. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- X. Ground and bond all conduits.
- Y. Identify conduit.
- Z. Use flexible and liquidtight conduits where required by NEC.
- AA. Flexible conduit up to six feet (6') in length can be used to connect mechanical equipment with motors, compressors, light fixtures or unless directed by engineer.
- AB. Install insulated bushings on all conduits and sleeves serving low voltage wiring prior to pulling wire unless otherwise noted.
- AC. Install grounded insulated bushings on all conduits and sleeves serving data wiring prior to pulling wire unless otherwise noted.
- AD. All low voltage conduits shall be sized to have less than 40% fill. Each penetration through a surface of any kind shall have a conduit sleeve with insulated bushings.
- AE. Junction boxes shall not be installed over four foot (4') above accessible ceiling without prior written approval by owner.
- AF. Minimum bend radius for communications conduits:
  - 1. For conduits 2" or less, maintain a minimum bend radius of (6) times the actual inside diameter of the conduit.
  - 2. For conduits greater than 2", maintain a minimum bend radius of (10) times the actual inside diameter of the conduit.

AG. Communications conduits shall have no more than two (2) 90 degree bends between pull points and contain no continuous sections longer than 100 feet. Insert pull points or pull boxes for conduits exceeding 100 feet in length.

1. A third bend is acceptable if:
  - a. The total run is not longer than (33) feet.
  - b. The conduit size is increased to the next trade size.

AH. No continuous section of conduit may exceed 100 feet. Utilize pull boxes as necessary. Refer to the pull box execution section for more information.

AI. All wiring in the same conduit shall be from the same source and have the same voltage except where approved by the owner.

### **3.02 BOX INSTALLATION**

- A. Install boxes in accordance with NECA "Standard of Installation."
- B. Install electrical boxes in locations as shown on the drawings and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
- C. Set wall mounted boxes at elevations to accommodate mounting heights as indicated.
- D. Electrical boxes are shown on the drawings in approximate locations unless dimensioned. Adjust box location up to ten foot (10') if required to accommodate intended purpose. Verify with architectural drawings and elevations for additional information.
- E. Orient boxes to accommodate wiring device orientation.
- F. Maintain headroom and present neat mechanical appearance.
- G. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only. Junction boxes shall not be installed over four foot (4') above accessible ceilings.
- H. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than six inches (6") from ceiling access panel or from removable recessed luminaire.
- I. Fire-stop boxes to preserve fire resistance rating of partitions and other elements. Boxes may be installed within a minimum of 24 inch separation with written approval prior to installation.
- J. Coordinate mounting heights and locations of outlets mounted above counters, benches, and back splashes.
- K. Locate outlet boxes to allow luminaires positioned as shown on the drawings. If light fixture locations conflict with ceiling plans, the electrical contractor shall document discrepancies and send to the engineer for clarification.
- L. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.
- M. Use flush mounting outlet box in finished areas.
- N. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- O. Do not install flush mounting box back-to-back in wall, provide minimum six inch (6") separation.
- P. Provide minimum 24 inch separation for receptacles in acoustic rated walls. Provide sound blocking putty where lighting control devices are located in the same stud cavity.
- Q. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- R. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- S. Use adjustable steel channel fasteners for hung ceiling outlet box.
- T. Do not fasten boxes to ceiling support wires.
- U. Support boxes independently of conduit.
- V. Use gang box where more than one device is mounted together. Do not use sectional box.

- W. Use gang box with plaster ring for single device outlets.
- X. Large Pull Boxes: Use set screw enclosure in interior dry locations, surface-mounted cast metal box in other locations.
- Y. Use stamped steel bridges to fasten flush mounting outlet box between studs.
- Z. Group devices associated with each other eight inches (8") on center (i.e. receptacle, data, voice outlet).

### 3.03 SURFACE RACEWAY AND WALL DUCT INSTALLATION

- A. Install products in accordance with manufacturer's instructions. Provide all trim and accessories.
- B. Use flat-head screws, clips, and straps to fasten raceway channel to surfaces. Mount plumb and level.
- C. Use suitable insulating bushings and inserts at connections to outlets and corner fittings.
- D. Wire Way Supports: Provide steel channel.
- E. Close ends of wire way and unused conduit openings.
- F. Ground and bond raceway and wire way.
- G. Install surface metal raceway in exposed existing finished areas where indicated on the drawing. Coordinate all raceway routing with architect.
- H. Install dual channel metal raceway assemblies in computer areas.
- I. Install insulated bushings on all Wiremold terminated above accessible areas serving low voltage wiring prior to pulling wire unless otherwise noted.

### 3.04 PULLBOXES

- A. Size communications cabling pull boxes according to the following:

Conduit Trade Size	Width	Length	Depth	Width Increase for Additional Conduit
1"	4"	16"	3"	2"
1-1/4"	6"	20"	3"	3"
1-1/2"	8"	28"	4"	4"
2"	8"	36"	4"	5"
2-1/2"	10"	42"	5"	6"
3"	12"	48"	5"	6"
4"	16"	60"	8"	6"

- B. Directional changes within a pullbox shall not be allowed. Conduit entering the box shall have conduit leaving the box from the opposite side. Do not use a pull box to make 90 degree turns.
- C. Install pullboxes in conveniently accessible locations.
- D. Where identified on drawings as lockable, key all pullboxes the same.
- E. Label all pull boxes. Handwritten labels shall not be accepted.

### 3.05 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit using materials and method to preserve fire resistance rating of partitions and other elements.
- B. Piping and Ductwork: Route conduits through roof openings or through suitable roof jack with pitch pocket. Coordinate location with roofing installation specified.
- C. Coordinate installation of outlet and junction boxes for equipment connection.

**3.06 ADJUSTING**

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closures in unused box openings.
- C. Adjust floor box flush with finish flooring material.

**3.07 CLEANING**

- A. Clean interior of boxes to remove dust, debris, and other material.
- B. Clean exposed surfaces and restore finish.

**END OF SECTION 26 0533**





**SECTION 26 0553**  
**IDENTIFICATION FOR ELECTRICAL SYSTEMS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Wire markers
- B. Conduit markers
- C. Identification

**1.02 REFERENCES**

- A. NFPA 70 - National Electrical Code
- B. NFPA 70E - Standard for Electrical Safety in the Workplace

**1.03 SUBMITTALS**

- A. Product Data: Provide catalog data for nameplates, labels and markers.
- B. Samples: Submit two nameplates 4" x 4" in size illustrating materials and engraving quality.
- C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

**1.04 REGULATORY REQUIREMENTS**

- A. Conform to requirements of NFPA 70.
- B. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.

**PART 2 PRODUCTS**

**2.01 WIRE MARKERS**

- A. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.
- B. Legend:
  - 1. Power and Lighting Circuits: Branch circuit or feeder number indicated.
  - 2. Control Circuits: Control wire number indicated on schematic and interconnection diagrams.

**2.02 CONDUIT MARKERS**

- A. Location: Mark conduit longer than 20 feet.
- B. Spacing: 30 feet on center.
- C. Color:
  - 1. 208 Volt System: Black
  - 2. Fire Alarm System: Red
  - 3. Other Systems: Green

**2.03 IDENTIFICATION**

- A. Identify All Junction Boxes With Appropriate Marker As Follows:
  - 1. 208 Volt System: Black (circuit name and number)
  - 2. Fire Alarm System: Red
- B. Series rating identification:
  - 1. Upstream devices of series rated components not enclosed in a single NEMA type enclosure shall be identified with a nameplate using 1/8-inch lettering height reading "CAUTION - SERIES RATED SYSTEM - IDENTICAL COMPONENT REPLACEMENT REQUIRED".

2. Downstream devices of series rated components not enclosed in a single NEMA type enclosure shall be identified with a nameplate using 1/8-inch lettering height reading "CAUTION - SERIES RATED SYSTEM - ADDITIONAL SERIES COMBINATION RATING: XX,XXX RMS SYMMETRICAL AMPERES" where XX,XXX shall be the series combination rating.
- C. Write the circuit number of each device inside the device box (not ON the device cover). All receptacles and light switches (new and existing) shall have the final circuit number installed on each device cover with a nylon label. Coordinate exact requirements with the owner prior to installation.
- D. Temporary label all outlets and switches with circuit numbers.
- E. All receptacles capable of being powered by an emergency generator shall be identified with a red sticker 3/8 inch diameter with an adhesive back.
- F. Label all outlets and switches with an adhesive label identifying panel and circuit the device is energized by.

### **PART 3 EXECUTION**

#### **3.01 PREPARATION**

- A. Degrease and clean surfaces to receive nameplates and labels.

#### **3.02 INSTALLATION**

- A. Install nameplate and label parallel to equipment lines.
- B. Secure nameplate to equipment front using screws.
- C. Secure nameplate to inside surface of door on panelboard that is recessed in finished locations.
- D. Identify conduit using field painting.

**END OF SECTION 26 0553**

**SECTION 26 2726**  
**WIRING DEVICES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Wall switches
- B. Duplex receptacles
- C. Wall plates

**1.02 RELATED REQUIREMENTS**

- A. Specification Section 26 0533 - Raceway and Boxes for Electrical Systems
- B. Specification Section 26 0543 - Underfloor Ducts for Electrical Systems
- C. Specification Section 26 0943 - Digital Lighting Control Systems

**1.03 REFERENCE STANDARDS**

- A. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association; 2010
- B. NEMA WD 1 - General Color Requirements for Wiring Devices; National Electrical Manufacturers Association; 1999 (R 2005)
- C. NEMA WD 6 - Wiring Device -- Dimensional Requirements; National Electrical Manufacturers Association; 2002 (R 2008)
- D. NFPA 70 - National Electrical Code; National Fire Protection Association; 2011
- E. UL Standard 943 - Standard for Safety for Ground-Fault Circuit Interrupters (GFCIs)

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.
- C. Manufacturer's Installation Instructions.
  - 1. Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements.
  - 2. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 6000 - Product Requirements, for additional provisions.
  - 2. Extra Wall Plates: One of each style, size, and finish.

**1.05 QUALITY ASSURANCE**

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Products: Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

**PART 2 PRODUCTS**

**2.01 WALL SWITCHES**

- A. Description:
  - 1. Heavy Duty, AC only general-use snap switch, complying with NEMA WD 6 and WD 1.
  - 2. Body and Handle: Impact-resistant plastic with toggle handle. Auto-grounding strap.
  - 3. Ratings: Match branch circuit and load characteristics. Default rating is 20A, 120/277V, 1HP.

4. Wiring: Back and side wire connections. Accepts #14-#10 AWG solid and stranded copper conductors.
  5. Provide #12 AWG solid pigtails at each device. Splice to building wire within outlet box.
  6. Color: Selected during submittal phase. Provide color chart upon request.
- B. Types:
1. Toggle Switches
    - a. Approved Manufacturers and Models:
      - 1) Pass & Seymour #PS20AC
      - 2) Cooper #2221
      - 3) Hubbell #1221
      - 4) Leviton #1221-2
    - b. Description: Single pole, double pole, 3-way, and 4-way toggle switches as indicated on plans.

## 2.02 DUPLEX RECEPTACLES

- A. Description
1. Style: Hard use specification grade
  2. Device Body: Impact resistant plastic with impact-resistant nylon face. Auto-grounding strap.
  3. Configuration: NEMA WD 6, type as specified and indicated.
  4. Rating: Match branch circuit and load characteristics. Default rating is 5-20R, 125V, 20A.
  5. Standards: Receptacles comply with NEMA WD 6 and WD 1.
  6. Wiring: Back and side wire connections. Accepts #14-#10 AWG solid and stranded copper conductors.
  7. Provide #12 AWG solid pigtails at each device. Splice to building wire within outlet box.
  8. Color: Selected during submittal phase. Provide color chart upon request.
- B. Types
1. Duplex Receptacles
    - a. Manufacturers:
      - 1) Pass & Seymour #5362
      - 2) Cooper #5362C
      - 3) Hubbell #5362
      - 4) Leviton #5362-S
    - b. Description: Traditional style, hard use specification grade duplex receptacle with wraparound grounding/mounting strap.
  2. Tamper-Resistant Duplex Receptacles
    - a. Manufacturers:
      - 1) Pass & Seymour #TR5362
      - 2) Cooper #TRSGF
      - 3) Hubbell #HBL5362TR
      - 4) Leviton #5362-SG
    - b. Description: UL listed tamper-resistant receptacle with thermoplastic shutters.
    - c. Receptacles in all areas as noted in NEC Article 406.

## 2.03 WALL PLATES

- A. Standard Cover Plates:
1. Type 302 stainless steel cover plates. Cover plate style to be confirmed during submittal phase.
  2. Basis of Design: Pass & Seymour #SS (Metal), to be confirmed during submittal phase.
  3. Provide coverplate for all devices and provide multiple gang plates where required.
- B. Jumbo Cover Plates:
1. Type 302 stainless steel oversize cover plates. Cover plate style to be confirmed during submittal phase.

2. Basis of Design: Pass & Seymour #SSO (Metal) to be confirmed during submittal phase.
3. Provide coverplate for all devices and provide multiple gang plates where required.
4. Provide oversize plates on all masonry rough-ins. Verify with architect prior to work being performed.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that outlet and switch boxes are installed at proper height.
- B. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- C. Verify that floor boxes are adjusted properly.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

#### **3.02 PREPARATION**

- A. Provide extension rings as needed to bring outlet and switch boxes flush with finished surface.
- B. Clean debris from outlet and switch boxes prior to device installation.

#### **3.03 INSTALLATION**

- A. Install securely, in a neat and workmanlike manner, as specified in NECA 1.
- B. Install devices plumb and level.
- C. Install switches with OFF position down.
- D. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.
- E. Install receptacles with grounding pole on top.
- F. Connect wiring device grounding terminal to outlet box with bonding jumper.
- G. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
- H. Connect wiring devices by wrapping conductor around screw terminal.
- I. Use oversize plates for outlets installed in masonry walls.
- J. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.
- K. The electrical contractor shall verify floor finish and location before ordering floor devices.
- L. The feeding of receptacles downstream of GFI receptacles for protection in lieu of providing multiple GFI receptacles is NOT allowed.

#### **3.04 INTERFACE WITH OTHER PRODUCTS**

- A. Coordinate locations of outlet boxes provided under Section 26 0533 to obtain mounting heights specified.
- B. Install wall switches 48 inches above finished floor.
- C. Install convenience receptacle 18 inches above finished floor.
- D. Install above-counter convenience receptacle 6 inches above counter.
- E. Install telephone jack 18 inches above finished floor.
- F. In masonry walls, switches and receptacle heights shall be adjusted as required such that outlets are at nearest mortar joint to specified height.
- G. Coordinate the installation of wiring devices with underfloor duct service fittings provided under Section 26 0543.

#### **3.05 FIELD QUALITY CONTROL**

- A. Perform field inspection, testing, and adjusting in accordance with Section 01 4000.

- B. Inspect each wiring device for defects.
- C. Operate each wall switch with circuit energized and verify proper operation.
- D. Verify that each receptacle device is energized.
- E. Test each receptacle device for proper polarity.
- F. Test each GFCI receptacle device for proper operation.

**3.06 ADJUSTING**

- A. Adjust devices and wall plates to be flush and level.

**3.07 CLEANING**

- A. Clean exposed surfaces to remove splatters and restore finish.

**3.08 EXTRA MATERIALS AND LABOR**

- A. The electrical contractor shall include in their bid an allowance to install an additional two duplex receptacles including an average 50 feet of raceway, associated wiring, back box and labor, and all accessories required to energize each receptacle requested. Receptacle(s) may be added anytime during the construction process as requested by the owner or design team. Any unused devices shall be turned over to the owner at the final acceptance of building.

**END OF SECTION 26 2726**

**SECTION 27 0050**  
**BASIC COMMUNICATIONS REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Basic Communications Requirements specifically applicable to Electrical Division Specification Sections.
- B. Division 27 Specification requirements also include, by reference, all Division 00 and 01 specification sections. This contractor is responsible to review these specification sections. Requirements of these specification sections are included as a part of this contract.
- C. Division 27 Specification requirements also include, by reference, Specification Section 08 7100 - Door Hardware. Review and inclusion of the electrical requirements of this specification section are included as a part of this contract.

**1.02 OWNER OCCUPANCY**

- A. The owner will occupy the premises during the construction period.
- B. Limit use of site and premises to allow owner occupancy.
- C. Cooperate with the owner to minimize conflict and to facilitate owner's operations.
- D. Schedule the work to accommodate this requirement.

**1.03 REGULATORY REQUIREMENTS**

- A. This contractor shall give proper authorities all requisite notices relating to work in their charge, obtain official permits, licenses for temporary construction and pay proper fees for it.
- B. This contractor is to be solely answerable for and shall promptly make good all damage, injury or delay to other contractors, to neighboring premises or to persons or property of the public by themselves, by their employees or through any operation under their charge, whether in the contract or extra work.
- C. No attempt has been made to reproduce in these specifications any of the rules or regulations contained in city, state or federal ordinances and codes pertaining to the work covered by these specifications that the contractor be thoroughly familiar with all such ordinances and codes.
- D. The fact that said various rules, regulations and ordinances are not repeated in this specification does not relieve the contractor of the responsibility of making the entire installation in accordance with the requirement of those authorities having jurisdiction.
- E. All work shall comply with the applicable recommendations of:
  - 1. National Board of Fire Underwriters
  - 2. ANSI-NFPA 70 National Electrical Code
  - 3. National Fire Protection Association (NFPA)
  - 4. Occupations Safety and Health Act (OSHA)
  - 5. IBC Building Code (current) and any current applicable city building and or electrical codes.
  - 6. Fire Protection: Conform to International Fire Code (IFC) and NFPA
  - 7. International Energy Conservation Code (IECC)
- F. Obtain permits and request inspections from authority having jurisdiction.
- G. Conform to latest approved versions of codes.

**1.04 PROJECT/SITE CONDITIONS**

- A. Install work in locations shown on drawings unless prevented by project conditions.
- B. Prepare drawings showing proposed rearrangement of work to meet project conditions, including changes to work specified in other sections. Obtain permission of owner and architect/engineer before proceeding.

- C. This contractor shall, before submitting their bid, visit the site of the project to familiarize themselves with locations and conditions affecting their work.
- D. It is the intent of this specification that the contractor furnishes all labor and material required to complete the installation as outlined in the drawings and specifications. No additions to the contract price shall be allowed due to the failure of this contractor to properly evaluate the effect of existing conditions on the work to be done under this contract.
- E. Whenever renovation or remodeling or relocation of existing equipment is included in the contract, it is imperative that all locations of existing wiring conduits, electrical panels, equipment, services and grades be noted on the job site before bid is submitted and that all elevations and grades be verified before roughing in new work.
- F. This contractor shall provide holes as necessary for the installation of their work and in accordance with materials other than the structure.

#### **1.05 SEQUENCING AND SCHEDULING**

- A. This contractor shall arrange their work in order that it progresses along with the general construction of the building.
- B. This contractor shall be kept informed as to the work of other trades engaged in this project and shall execute their work in such a manner so as not to delay or interfere with progress of other contractors.
- C. Where space for electrical lines and conduit is limited, it is imperative that all such trades coordinate their work so as to ensure concealment in space provided. Where conflict exists, the design team shall decide priority of space. If work is not properly coordinated, the design team may require removal and relocation of work without additional compensation.

#### **1.06 GUARANTEE**

- A. This contractor shall guarantee all of the apparatus, materials, equipment furnished and labor installed under this contract for a period of one year after date of final acceptance, unless a longer period is specified.
- B. Neither final certificate of payment nor any provisions in the contract documents nor partial or complete occupancy of premises by owner shall constitute an acceptance for work not done in accordance with contract documents or relieve the contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship.
- C. Should any defects arise as the result of defective workmanship or material within the guarantee period set forth, this contractor shall make the necessary correction at their own expense.

#### **1.07 ENGINEER APPROVED EQUAL PRODUCTS**

- A. When the engineer, at the request of the interested parties, including the contractor, supplier and manufacturer approved "engineer approved equal" products for this project, such products are approved on the assumption that they will equal or exceed the performance of the products specified.
- B. If such products do not do so after being installed on this project, this contractor shall replace or modify the particular product as necessary to equal the performance of the products specified at no expense to the owner, architect or engineer.
- C. Request for "engineer approved equal" products shall be received by the architect/engineer prior to the last addendum being issued. Requests for substitutions received after this date will not be considered. Substitution requests shall clearly state which products are being considered for substitution. Substitution requests shall include all pertinent product information needed to evaluate the substitution as an "equal".
- D. Similar products shall be all of the same manufacturer and style. There is no exception to this unless prior approval has been granted from engineer.



#### **1.08 OWNER'S RIGHT OF SALVAGE**

- A. Before beginning construction, the contractor shall check and verify with the owner each item of existing equipment that must be removed.
- B. The owner will designate which items of material or equipment not reused that he may wish to keep. The contractor shall then remove these items with care and store in a location designated by the owner for the owner's disposal.
- C. All other items of equipment to be removed and not specified for reuse in new construction or reserved by the owner for their use shall become the property of the contractor and shall be removed from the site.

#### **1.09 PROTECTION AND MAINTENANCE**

- A. The work covered by these drawings and specifications involves all work in the existing building.
- B. Where necessary to connect to any existing utility service, this electrical contractor shall contact the owner and shall coordinate any building service connection with the owner so that normal operation to the building is disrupted as little as possible.
- C. Any work to be done in existing structures shall be coordinated with the owner and arrangements made so that traffic flow may be maintained and areas finished where possible before other areas are begun.
- D. This contractor shall protect existing equipment in finished areas from dirt, dust, and damage as a result of their work.
- E. Coordinate protection requirements with department heads before beginning construction.
- F. Protect any building openings from unauthorized entry. Coordinate with owner where building entry must be controlled.

#### **1.10 DEMOLITION**

- A. This contractor shall be responsible for the demolition and removal of all existing system elements within the project area except as follows:
  - 1. Elements shown on the drawings as "existing to remain and/or to be reused".
  - 2. Elements serving adjacent areas.
  - 3. Elements required for the support of the newly remodeled areas.
  - 4. All elements to be removed are subject to the Owner's Right of Salvage.
- B. Preserve services to the existing facility. Extend/reroute/reconnect the existing systems as required providing for the continued function of these systems.

#### **1.11 CUTTING AND PATCHING**

- A. This contractor shall do all cutting and patching necessary for the installation of their work in all existing and new buildings unless otherwise noted.
- B. In areas where the integrity of fire separation assembly/wall is compromised by the work, this contractor shall be responsible to patch and/or seal openings as necessary to maintain and/or return fire separation to rating as required by applicable codes.
- C. This contractor shall do all cutting and patching required for their work beyond the remodeled areas unless otherwise noted. All finish work shall include patching to match existing adjacent surfaces. Painting shall be by others.

#### **1.12 CLEANING AND RUBBISH**

- A. This contractor, upon completion of their work, shall remove all rubbish and debris resulting from their operation and shall remove it from site at their own expense.
- B. As far as their work is concerned, all equipment shall be cleaned and the premises left in first class condition.

- C. This contractor shall maintain the work area each day to prevent hazardous accumulation of debris from their work.

#### **1.13 SEALING AND PENETRATION**

- A. Clearance around the piping passing through fire or smoke rated construction shall be sealed to maintain the rated integrity of the construction (1 hr. 2 hrs. etc.). One and two-hour rated assemblies are to be patched on both sides of the assembly.
- B. This contractor shall verify rating and location of all such construction with the architectural drawings and seal all penetrations.
- C. Manufacturer offering products to comply with the requirements include the following:
  - 1. Dow Corning "Silicone RTV Foam"
  - 2. 3-M Corporation "Fire Barrier Caulk and Putty"
  - 3. Thomas and Betts "Flame Safe Fire Stop System"
  - 4. Specified Technologies "EZ-Path"
- D. Installation of these products are to be in strict accordance with the manufacturer's recommendations and architectural specifications, details or equivalent fire stopping general specification section.
- E. This contractor shall submit shop drawings showing approved sealing assemblies to be utilized on this project.

#### **1.14 HAZARDOUS MATERIALS**

- A. If the contractor stores any hazardous solvents or other materials on the site, they shall obtain copies of the safety data sheets for the materials and post them at the site. The contractor shall inform the owner and all employed of any potential exposure to this material.
- B. At no time shall any product containing asbestos be incorporated into the work.
  - 1. If asbestos materials are encountered, report to the owner. The owner will be responsible for asbestos removal.

#### **1.15 RECORD DRAWINGS**

- A. This contractor shall provide (at the conclusion of the project) one clean, non-torn, neat and legible "as-built" set of drawings to the owner. These drawings shall show the routing of conduit, wiring and equipment drawn in at scaled locations. All cabling, devices, and endpoints shall be labeled and conform to head end programming and system drawings. All dimensions indicated shall be referenced to a column line. A set of construction blueprints will be furnished for this work.
- B. All system head-end equipment and devices shall be shown on the "as-built" drawings.
- C. Refer to Architectural Specification Sections for additional requirements.
- D. This contractor shall update these drawings during the project at least every week.

#### **1.16 ALTERNATES**

- A. Refer to description of alternate bids under General Specification Sections.

#### **1.17 REVIEW OF MATERIALS**

- A. This contractor shall submit to the engineer, for review one (1) electronic copy giving a complete list of materials, fixtures, devices and panels he proposes to furnish. The brochure shall contain complete information as to the model of equipment, type, size, capacities, dimensions, and illustration. An electronic copy shall be kept on the job at all times.
- B. Checking of submittal drawings by the engineer does not relieve the contractor of the responsibility for the accuracy of such drawings and for their conformity to drawings and specifications unless he notifies engineer, in writing, of such deviation at time such drawings are furnished.

- C. All submittals shall have the date marked on them when the contractor receives them from the supplier. Submittals shall be submitted through the contractor and shall not come direct from the supplier to the architect or engineer.
- D. This contractor shall mark the date and sign each set signifying that the contractor has checked each of them in their entirety before submitting to the engineer. Submittals that are not dated and signed by the contractor will not be accepted, or checked and will be marked "resubmit" and sent back to the contractor.

#### **1.18 TEST OF SYSTEMS**

- A. This contractor, before concealed, shall test all systems installed under this contract as called for in these specifications and as required by local codes. Tests shall be made in the presence of the engineer, local authorities or their duly authorized representative. Any defects discovered in testing shall be corrected and the tests repeated until all defects are eliminated.
- B. This contractor shall coordinate all testing of systems within Division 27 specification section. Follow manufacturer's recommended testing procedures as a minimum unless the following related specification section has further detail of testing procedures. The more stringent testing procedure shall be used.

#### **1.19 SCOPE OF WORK**

- A. This contractor shall furnish all the labor and material necessary to install complete communications system for the building.
- B. This contractor shall furnish all the labor and material to install a complete communication system in the new building. The system shall include all items of work as outlined in these specifications and on the drawings.
- C. All work shall be performed by a well-qualified, licensed or certified technician with a thorough knowledge of the various systems involved in this building. It shall be this contractor's responsibility to see that their technicians are familiar with all the various codes, installation procedures and tests applicable to this work.
- D. All equipment shall be new and of the type specified by the engineer unless otherwise noted in these specifications or on the drawings to remain and or be reused.
- E. The intent of the specifications and drawings is for complete installation of the systems outlined in the specifications and drawings so that at the conclusion of construction the system will be turned over to the owner complete and ready for safe and efficient operation.
- F. This contractor is required to furnish and install all such items normally included on systems of this type, which, while not mentioned directly herein or on the drawings are obviously essential to the installation and operation of the system and which are normally furnished on quality installation of this type. The specifications and drawings cannot deal individually with the many minute items that may be eventually required by the nature of the systems.
- G. This contractor, shall before proceeding with any work, review the architectural drawings and specifications. Any conflict between the technology and architectural drawings and specifications shall be reported to the engineer for clarification.
- H. If there is a discrepancy between the drawings and the specifications or within either document, the more stringent requirement shall be estimated unless brought to the engineer's attention and an addendum is issued for clarification.
- I. The Communications Contractor shall establish system elevations prior to fabrication and installation. The Communications Contractor shall coordinate elevations with other trades. All elevations shall be coordinated with all trades in the field prior to installation. When a conflict between trades arises, the design team shall be notified immediately prior to further installation however priority shall be as follows:
  - 1. Lighting Fixtures
  - 2. Gravity flow piping, including steam and condensate.
  - 3. Electrical bus duct.

4. Sheet metal.
  5. Cable trays, including access space.
  6. Other piping.
  7. Conduits and wireway.
- J. Low Voltage Cable Installation
1. This contractor is to install if they are licensed to, or contract with a licensed electrician to install conduit serving low voltage cables located in all mechanical rooms and non-accessible areas and exposed structural areas. Use cable trays in other areas as indicated on the drawings. Where cable trays are not accessible, use J-hooks equal to Cablofil or Caddy Cable CAT. No cable shall be allowed to lie on accessible ceilings tiles. Provide sleeves between walls and accessible clouds. Provide hooks with closure holes and cable ties. Mount hooks 3 feet on center.

#### **1.20 DAILY HOUSEKEEPING AND CLEANING**

- A. At the end of each workday, the contractor shall remove all of their debris, rubbish, tools, and surplus materials from the project work area. The work area shall be broom cleaned and left in a neat and orderly condition. The contractor, for the removal of debris from the project, shall not use the owner's waste disposal facility.
- B. At end of construction, all equipment shall be cleaned and the premises left in first class condition as far as this contractor's work is concerned.

#### **1.21 WALL CONTINUITY (1 HR.)**

- A. All items mounted in 1 hr. rated walls requiring an opening larger than a four inch (4") square (16 sq. inches) require the 1 hr. rating not be degraded.
- B. Any system panels in a 1 hr. wall will require the exterior of the recessed panel be covered with 5/8 inch fire rated gypsum board. This is true for any device requiring more than a 16 sq. inch opening.

#### **1.22 DIGITAL MEDIA AGREEMENT**

- A. Computer Aided Drafting (CAD) documents may be available to the contractor for some uses. Contact the engineer prior to bidding to determine what information is available to be transmitted to the contractor in digital form.
- B. When documents are determined to be available, and as requested by the contractor, they will be transmitted upon the completion and execution of the MODUS digital media agreement. A service fee for each document transmitted will be assessed to the contractor. Documents will be transmitted upon payment receipt. Current service fee is \$100.00 per CAD sheet.

#### **PART 2 PRODUCTS**

**NOT USED**

#### **PART 3 EXECUTION**

**NOT USED**

**END OF SECTION 27 0050**

## **SECTION 27 0090**

### **MINOR COMMUNICATION DEMOLITION FOR REMODELING**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. The requirements of the Contract Forms, the Conditions of the Contract, Division 1 - General Requirements and Specification Section 26 0050 - Basic Electrical Requirements "General Provisions" apply to this section.

##### **1.02 SCOPE**

- A. This contractor shall be responsible for the demolition and removal of all existing communication elements within the project area except as follows:
  - 1. Elements shown on the drawings as "existing to remain and/or to be relocated".
  - 2. Elements serving adjacent areas.
  - 3. Elements required for the support of the newly remodeled areas.
- B. Preserve services to the existing facility. Extend, reroute, and reconnect existing systems as required providing for the continued function of these systems.
- C. Demolition shall be accomplished by the proper tools and equipment for the work to be removed. Personnel shall be experienced and qualified in the type of work to be performed.
- D. This contractor shall remove all abandoned equipment, cabling and boxes associated with the remodeled area unless noted otherwise.
- E. This contractor is responsible for providing communication cabling protection for all existing systems to remain during this project.

##### **1.03 MATERIALS**

- A. All elements to be removed are subject to the Owner's Right of Salvage.
- B. All materials removed shall be the property of the removing contractor and shall be removed from the site by them, unless otherwise specified.
- C. The owner may designate and have salvage rights to any material herein demolished by this contractor. It will be the owner's responsibility to designate such salvageable items and remove them prior to the contractor working in that area.

##### **1.04 EXISTING CONDITIONS**

- A. Demolition plans are based on casual field observations and existing record documents. Report discrepancies to the owner before disturbing existing installation. Beginning of demolition means installer accepts existing conditions.
- B. If any existing equipment, cabling or devices that are to remain are disturbed by operations under this contract, this contractor is required to re-establish continuity of such systems according to owner approved standards and methods.
- C. This contractor shall arrange for the general contractor to repair and patch all construction with material necessary to match surrounding due to removal of equipment and conduit.
- D. This contractor shall furnish all required labor and material for extension of existing systems.

#### **PART 2 PRODUCTS**

##### **NOT USED**

#### **PART 3 EXECUTION**

##### **3.01 EXAMINATION**

- A. Beginning of demolition means installer accepts existing conditions.
- B. Verify existing structured cabling, special systems wiring topology, and reconnect as necessary.

- C. Verify that abandoned cabling being removed is disconnected from the source and is not actively serving other areas of the existing building. Reconnect as required to prevent any system downtime.
- D. Demolition drawings are based on casual field observation and existing record documents. Report discrepancies to the owner before disturbing existing installation.

### **3.02 PREPARATION**

- A. Disconnect structured cabling and special systems components in walls, floors, and ceilings scheduled for removal. Disconnect circuits at the source.
- B. Coordinate any service outage with all of the owner's existing telecommunications service providers.
- C. Existing Communication Network: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchover connections. Obtain permission from the owner, at least 48 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections as required.
- D. Existing Telephone System: Maintain existing system in service.
- E. Maintain all existing communication lines to the building fire alarm system, elevators and intrusion system.

### **3.03 DEMOLITION AND EXTENSION OF EXISTING COMMUNICATIONS WORK**

- A. Demolish and extend existing communications work under provisions of this section.
- B. Remove, relocate, and extend existing installations to accommodate new construction.
- C. Remove abandoned wiring to source of supply.
- D. Disconnect abandoned cable and remove devices. Provide a blank cover for abandoned devices that have not been removed.
- E. Disconnect and remove abandoned patch panels, cross connect fields and special systems distribution equipment.
- F. Disconnect and remove devices and equipment serving abandoned special systems.
- G. Repair adjacent construction and finishes damaged during demolition and extension work.
- H. Extend existing installation using materials and methods compatible with existing communications installations or as specified.

### **3.04 CLEANING AND REPAIR**

- A. Clean and repair existing materials that remain or are to be reused.

### **3.05 INSTALLATION**

- A. Install relocated materials and equipment.

**END OF SECTION 27 0090**

**SECTION 27 1005**  
**TELECOMMUNICATIONS CABLING INFRASTRUCTURE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Horizontal copper
- B. Work area outlets
- C. Grounding and bonding products

**1.02 SUMMARY**

- A. Work included, but not limited to:
  - 1. Data network backbone cable installation
  - 2. Data network horizontal cable installation
  - 3. Data wiring closet setup
  - 4. Infrastructure cabling management
  - 5. Data patch cables
  - 6. Ground and bonding
  - 7. Testing requirements

**1.03 GENERAL REQUIREMENTS**

- A. The drawings and specifications indicate the intent and direction of the installation. Items and their location are shown diagrammatic and are to be field verified by the cabling contractor prior to completing work associated with the item.
- B. All cabling work shall be performed in strict accordance with all applicable laws, ordinances, codes of local, state and federal government, or other authorities having lawful jurisdiction. The cabling contractor is required to verify all requirements.
- C. The cabling contractor shall furnish all required labor, material, and associated tools to facilitate the installation of all the infrastructure cables and associated items specified herein and with respect to the infrastructure design drawings without damage to the cables, associated items, and/or facilities.
- D. Qualified personnel, utilizing state-of-the-art equipment and techniques shall complete all installation work.
- E. All cables routed outside of the cable runway installed shall be properly supported.
- F. All wall and/or floor penetrations shall be via metal conduit sleeves properly sized, supported and fire stopped.
- G. All materials shall be installed in accordance with the manufacturer's specified recommendations and practices.

**1.04 QUALITY ASSURANCE**

- A. Standards: All telecommunications wiring, cabling devices, and other associated items and work shall conform to the most recent requirements of the following codes, standards, and organizations where applicable:
  - 1. American National Standards Institute (ANSI)
  - 2. Electronic Industries Association (EIA)
  - 3. Federal Communications Commission (FCC)
  - 4. Institute of Electrical and Electronic Engineers (IEEE)
  - 5. International Organization for Standardization (ISO)
  - 6. National Electric Code (NEC)
  - 7. National Fire Protection Association (NFPA)
  - 8. BOCA National Building Code
  - 9. Underwriter's Laboratories (UL)
  - 10. Telecommunications Industry Association (TIA)

11. Building Industry Consulting Services International
  12. Society of Cable Telecommunications Engineers (SCTE)
- B. The copper data infrastructure cable system shall have a manufacturer's material and labor performance certification for the installed cable and components. The certification shall be that UTP Category 6 cabling infrastructure will perform to TIA's specifications for that Category. A manufacturer's written certification document shall be submitted at the completion of the project.
  - C. A matched solution shall be provided end-to-end for all cabling infrastructure. No third party components shall be provided unless otherwise noted elsewhere in the project specification or drawings.
  - D. The installer must be able to provide a warranty to the owner. Duration of the warranty shall be a minimum of ten years from the date of project completion and acceptance. It shall cover all of the product as well as their performance for the warranty period.
  - E. The cabling contractor shall be in business for a minimum of five (5) years.
  - F. The contractor must be registered with BICSI and have at least one Registered Communications Distribution Designer (RCDD) on full-time staff. Provide copy of certificate with submittals.
  - G. The contractor must possess current liability insurance certificates.
  - H. Provide a complete and detailed test plan for the telecommunications cabling system including a complete list of test equipment for the components and accessories for each cable type specified, 30 days prior to the proposed test date. Include procedures for certification, validation, and testing.

#### **1.05 CLOSE-OUT AND FINAL ACCEPTANCE**

- A. Operations and Maintenance Manuals
  1. Commercial off the shelf manuals shall be furnished for operation, installation, configuration, and maintenance of products provided as a part of this project. Submit operations and maintenance data not later than 2 months prior to the date of occupancy.
- B. Drawings and As-Builts
  1. Provide drawings including documentation on cables and termination hardware in accordance with TIA/EIA-606. Drawings shall include schedules to show information for cut-overs and cable plant management, patch panel layouts and cover plate assignments, cross-connect information and connecting terminal layout as a minimum. Drawings shall be provided in hard copy format and on electronic media for project engineer's review and final delivery to owner. Provide the following drawing documentation as a minimum:
    - a. Cables - A record of installed cable shall be provided in accordance with TIA/EIA-606. The cable records shall include only the required data fields in accordance with TIA/EIA-606. Include manufacture date of cable with submittal.
    - b. Termination Hardware - A record of installed patch panels, cross-connect points, distribution frames, terminating block arrangements and type, and outlets shall be provided in accordance with TIA/EIA-606. Documentation shall include the required data fields only as a minimum in accordance with TIA/EIA-606.
    - c. Working Red Line Drawings - A hand completed set of drawings indicating the general cable routing of the backbone cables and the primary routes of the horizontal cables shall be provided. Also indicate all wall and floor sleeves utilized. The drawings for this information shall be a non-working, clean set of drawings.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. The cabling contractor shall coordinate all delivery, storage and handling concerns with the general contractor.
- B. Provide protection from weather, moisture, extreme heat and cold, dirt, dust, and other contaminants for telecommunications cabling and equipment placed in storage.



### **1.07 APPROVED CABLING VENDORS**

- A. All cabling and connectivity products provided by the structured cabling contractor shall be part of the following complete end-to-end systems:
  - 1. Panduit
  - 2. Belden
  - 3. Commscope
  - 4. BerkTek
  - 5. Engineer approved equal.
- B. All components in the cabling channel shall be of the same manufacturer with performance that meets or exceeds the characteristics of the horizontal cabling.

### **1.08 JACKET TYPE**

- A. This project is planned to have all ducted returns on HVAC equipment. It shall be this contractor's responsibility to make final confirmation. Once confirmed, PVC jacketed cable shall be used. If there are any wild returns on this project, plenum rated cable shall be used.

### **1.09 COLORS**

- A. The owner shall determine all colors of cables, jack inserts, and other visible components during the submittal process from the standard colors available by each individual manufacturer. No custom colors will be used.

## **PART 2 PRODUCTS**

### **2.01 HORIZONTAL COPPER**

- A. Data and Voice:
  - 1. Provide unshielded Twisted Pair (UTP), Category 6 4/pair, 23 AWG to locations identified on the plans.
    - a. Panduit - TX6000
    - b. Commscope Uniprise - UltraMedia 7504
    - c. Belden - Data Twist 3600
    - d. BerkTek - LANmark 1000
    - e. Superior Essex - DataGain 6+
    - f. Engineer approved equal
    - g. Cabling shall be also provided to each video surveillance camera shown on the plans unless otherwise noted.
    - h. Color to be determined by the owner.
- B. Patch Cables - Data Racks (Copper):
  - 1. Provide pre-connectorized copper patch cables that match performance and configuration of horizontal data and voice cabling. Length as required for installation per BICSI standards.
  - 2. Quantity: Structured cabling subcontractor shall provide sufficient patch cords for 75% of horizontal cable runs. For bidding purposes, use an average cord length of 10 feet for patch cords.
  - 3. Color and exact length shall be determined by the owner.
- C. Patch Cables - Workstations:
  - 1. Match performance and configuration of horizontal data and voice cabling. Length as required for installation per BICSI standards
  - 2. Quantity: Structured cabling subcontractor shall provide a workstation patch cord quantity equal to 50% of all wall-terminated data outlets. For bidding purposes, use an average cord length of 10 feet for patch cords. Patch cords shall be turned over to owner.
  - 3. Color and exact length shall be determined by the owner.

### **2.02 WORK AREA OUTLETS**

- A. Work Area Data/Voice Jacks:

1. Jacks shall be modular RJ-45 style and meet performance requirements of horizontal cabling.
  - a. Product shall be a matched solution from cabling manufacturer.
- B. Work Area Outlet Cover Plate:
  1. Telecommunications cover plates shall comply with TIA-568-C.1 and shall be flush design constructed of high impact thermoplastic material and match the style and color of receptacles and switch cover plates. Provide any blank inserts as required for all unused openings.
    - a. Product shall be a matched solution from cabling manufacturer.
- C. Voice Wall-Mounted Outlet:
  1. Provide stainless steel phone faceplate with steel screw terminals and information outlet capable of RJ45 connection to normal phone.
    - a. Product shall be a matched solution from cabling manufacturer.

### **2.03 GROUNDING AND BONDING PRODUCTS**

- A. Provide in accordance with UL 467, TIA J-STD-607, and NFPA 70. Components shall be identified as required by TIA/EIA-606. Provide ground rods, bonding conductors, and grounding busbars as specified in specification section 26 0526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

## **PART 3 EXECUTION**

### **3.01 GENERAL**

- A. The drawings and specifications are considered to reflect the intent and direction for a complete data cable system.
- B. Quantities shown are for general information and may be incorrect. The bidder is to verify all quantities and is to report any count differences to the engineer prior to submission of their installation response. The cabling contractor will be held responsible for all required quantities to complete the project to the intent and direction of the drawings and specifications.
- C. Material description and manufacturer's part numbers are shown. The cabling contractor is expected and has the responsibility to verify that the part number matches the description. Any discrepancy is to be noted to the engineer prior to response submittal. The cabling contractor is responsible for the correct materials being furnished and installed.
- D. Install telecommunications cabling and pathway systems, including the horizontal and backbone cable, pathway systems, telecommunications outlet/connector assemblies, and associated hardware in accordance with TIA-568-C.1, TIA-568-C.2, TIA-569, NFPA 70 and UL standards as applicable. Provide cabling in a star topology network. Pathways and outlet boxes shall be installed as specified in specification section 26. Install telecommunications cabling with copper media in accordance with the following criteria to avoid potential electromagnetic interference between power and telecommunications equipment. The interference ceiling shall not exceed 3.0 volts per meter measured over the usable bandwidth of the telecommunications cabling.
- E. Install UTP telecommunications cabling system as detailed in TIA-568-C.1. Screw terminals shall not be used except where specifically indicated on plans. Use an approved insulation displacement connection tool kit for copper cable terminations. Do not exceed manufacturers' cable pull tensions for copper and optical fiber cables. Provide a device to monitor cable pull tensions. Do not exceed 25 pounds pull tension for four pair copper cables. Do not chafe or damage outer jacket materials. Use only lubricants approved by cable manufacturer. Do not over cinch cables, or crush cables with staples. For UTP cable, bend radii shall not be less than four times the cable diameter. Cables shall all be terminated. There shall be no cable with unterminated elements. Cabling shall be continuous with no splices. Label cabling in accordance with paragraph titled LABELING.

### **3.02 HORIZONTAL CABLING**

- A. Install horizontal cabling as indicated on drawings. Do not untwist Category 6/6A UTP cables more than one half inch from the point of termination to maintain cable geometry. Provide slack cable in the form of a figure eight (not a service loop) on each end of the cable, 10 feet in the telecommunications room, and 12 inches in the work area outlet.

### **3.03 PATHWAYS**

- A. Provide in accordance with TIA-569 and NFPA 70. Provide building communications cabling pathway as specified in Section 26 0533 RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS.

### **3.04 WORK AREA OUTLETS**

- A. Terminate UTP cable in accordance with TIA-568-C, TIA-568-C.2 and wiring configuration as specified. All fiber optic cabling shall be terminated in accordance with TIA-568-C.3. Follow manufacturer's installation guidelines for all specific requirements related to work area outlet termination.

### **3.05 COVER PLATES**

- A. As a minimum, each outlet shall be labeled as to its function and a unique number to identify cable link in accordance with the section titled LABELING.

### **3.06 PULL CORDS**

- A. Pull cords shall be installed in conduit serving telecommunications outlets that do not have cable installed.

### **3.07 GROUNDING AND BONDING**

- A. Provide in accordance with TIA J-STD-607, NFPA 70 and as specified in Section 26 0526 GROUNDING & BONDING FOR ELECTRICAL SYSTEMS.

### **3.08 LABELING**

- A. Provide labeling in accordance with TIA/EIA-606. Handwritten labeling is unacceptable. Stenciled lettering for voice and data circuits shall be provided using either thermal ink transfer or laser printing.
- B. Cables shall be labeled using color labels on both ends with identifiers in accordance with TIA/EIA-606.
- C. Workstation outlets and patch panel connections shall be labeled using color coded labels with identifiers in accordance with TIA/EIA-606.

### **3.09 CABLE TESTING**

- A. General: Cables are to be tested after installation is complete with Fluke DTX tester or equivalent and delivered in electronic format for engineer review. If for any reason, the drop location, raceway and/or drop location box is removed for additional work of any nature, the drop location is to be re-tested if previously tested. All cables associated with the drop location are to be re-tested. The cost of re-testing is the responsibility of the cabling contractor.
  - 1. The field-test instrument shall be within the calibration period recommended by the manufacturer, typically 12 months.
- B. Category 6/6A Data - Unshielded Twisted Pair (UTP) Cable:
  - 1. Each UTP CAT 6 data cable installed shall be tested and a test result printout sheet shall be furnished at the completion of the project.
  - 2. The test shall be performed after the final cable and device termination has been completed and the faceplate installed. The test shall be of the "Basic Link" from completed end to completed end.
  - 3. The test shall be conducted utilizing a scanner that will generate a sweep frequency 1-250 megahertz signal on all pairs of the cable and test each pair of the cable for:
    - a. Pair mapping

- b. Cable length
  - c. Insertion loss
  - d. Near-End-Cross Talk (NEXT)
  - e. Attenuation to Near-End-Cross Talk Ratio (ACR)
  - f. Return loss (RL)
  - g. Power Sum Near-End-Cross Talk (PSNEXT)
  - h. Power Sum Equal Level Far-End-Cross Talk (PSELFEXT)
  - i. Far End Cross Talk (FEXT)
  - j. Propagation Delay & Delay Skew
  - k. Impedance
  - l. Capacitance
  - m. Resistance
- 4. Each data cable shall be tested to EIA/TIA-568, Category 6, compliance for acceptance.
  - 5. Each test result shall indicate the cable number, test date and tester name. All test results are to be submitted to the project engineer in electronic format for review during closeout and final acceptance.
  - 6. No hand written test results will be accepted by the project engineer.

**END OF SECTION 27 1005**